

**PASTORIA ENERGY FACILITY 160 MW EXPANSION PROJECT
SUPPLEMENT TO APPLICATION FOR CERTIFICATION
Responses to CEC Staff Data Adequacy Requests
Dated June 9, 2005
05-AFC-1**

AIR QUALITY

Appendix B (g) (8) (A) The information necessary for the air pollution control district where the project is located to complete a Determination of Compliance.

Response: Please refer to Exhibit 1 Air Quality Materials for a copy of the San Joaquin Valley APCD completeness letter dated May 19, 2005.

Appendix B (g) (8) (I) (iii) A protocol for a cumulative air quality modeling impacts analysis of the project's typical operating mode in combination with other stationary emissions sources within a six mile radius which have received construction permits but are not yet operational, or are in the permitting process. The cumulative inert pollutant impact analysis should assess whether estimated emissions concentrations will cause or contribute to a violation of any ambient air quality standard.

Response: Please refer to Exhibit 1 Air Quality Materials for a copy of the letter to Dr. James Reede dated REVISED May 18, 2005.

Appendix B (h) (4) A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.

Response: Please refer to Exhibit 1 Air Quality Materials for a copy of the letter to Dr. James Reede dated REVISED May 18, 2005.

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EXHIBIT 1
AIR QUALITY MATERIALS

- SJVUAPCD Completeness Letter dated May 19, 2005
- Letter from Nancy Matthews to Dr. James Reede dated REVISED May 18, 2005



San Joaquin Valley
Air Pollution Control District

May 19, 2005

Mr. Andrew Whittome, Project Manager
Pastoria Energy Facility, LLC
39789 Edmonston Pumping Plant Rd
PO Box 866
Lebec, CA 93243-0866

Re: Notice of Receipt of Complete Application (05-AFC-1)
Project Number: S-1052027

Dear Mr. Whittome:

The District has received your Application for Certification (05-AFC-1) for a 160 MW GE 7FA simple cycle combustion turbine generator, at Tejon Ranch 30 Miles S of Bakersfield, and 6.5 Miles E of Grapevine, Rancho El Tejon. Based on our preliminary review, the application appears to be complete. This means that your application contains sufficient information to proceed with our analysis. However, during processing of your application, the District may request additional information to clarify, correct, or otherwise supplement, the information on file.

Emissions from your project will exceed the public notification thresholds of District Rule 2201. Your project must therefore be public noticed for a 30-day period at the conclusion of our analysis, prior to the issuance of the final Determination of Compliance. It is estimated that the project analysis will take 120 hours, and you will be charged at the weighted labor rate in accordance with District Rule 3010. The current weighted labor rate is \$64.95 per hour, but please note that this fee is revised annually to reflect actual costs and therefore may change. No payment is due at this time; an invoice will be sent to you upon completion of the public notice process.

We will begin processing your application as soon as possible. In general, complete applications are processed on a first-come first-served basis.

David L. Crow
Executive Director/Air Pollution Control Officer

Northern Region Office
4230 Kiernan Avenue, Suite 130
Modesto, CA 95356-9322
(209) 557-6400 • FAX (209) 557-6475

Central Region Office
1990 East Gettysburg Avenue
Fresno, CA 93726-0244
(559) 230-6000 • FAX (559) 230-6061
www.valleyair.org

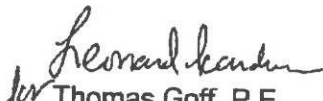
Southern Region Office
2700 M Street, Suite 275
Bakersfield, CA 93301-2373
(661) 326-6900 • FAX (661) 326-6985

Mr. Whittome
May 19, 2005
Page 2

Please note that this letter is not a permit and does not authorize you to proceed with your project. Final approval, if appropriate, will be in the form of a Determination of Compliance after application processing is complete. If you have any questions, please contact Mr. Thomas Goff at (661) 326-6900.

Sincerely,

David Warner
Director of Permit Services


for Thomas Goff, P.E.
Permit Services Manager

DW:rwk
Ms. Barbara McBride, Calpine

May 18, 2005
REVISED



1801 J Street
Sacramento, CA 95814
(916) 444-6666
Fax: (916) 444-8373

Dr. James Reede
Energy Facility Siting Project Manager
California Energy Commission
1516 - 9th Street
Sacramento, CA 95814

Re: Pastoria Energy Facility Expansion Project
Docket # 05-AFC-01

Dear Dr. Reede:

In response to recent, informal CEC Staff requests, we are providing the following additional information related to air quality impacts of the Pastoria Energy Facility Expansion Project.

1. Copies of District and EPA PSD Permit Applications

Copies of these application materials were sent to the Dockets Office in early May. Additional copies of these application materials were emailed to the CEC Staff's air quality consultant on May 17.

2. Additional Information Regarding Potential for Cumulative Impacts

Cumulative air quality impacts from the proposed project are discussed briefly in Section 5.2.7 of the AFC. More specific information regarding potential cumulative impact sources has been requested.

The basis for the applicant's conclusion that no additional emission sources need to be considered for cumulative air quality impacts is the information provided by the Kern County Planning Department, referenced in Section 5.9.1 of the AFC.

The existing conditions status was verified in a letter dated March 23, 2005, from Lorelei H. Oviatt, AICP, Supervising Planner, Kern County Planning Department. Specifically, this letter stated that...[t]here is no new development approved or proposed since 1999 that occurs within a 5- or 6-mile radius of the existing plant site.

Since no new development has been approved or proposed since 1999 within 5 to 6 miles of the project boundary, there are no potential new sources of emissions that would need to be included in a cumulative air quality impact analysis.

3. Schedule for Obtaining Other Required Air Quality Permits

The SJVAPCD schedule for issuing preliminary and final Determinations of Compliance for the proposed project will directly impact the CEC's AFC review schedule. The applicant has discussed project review with the SJVAPCD staff (telephone conversation with Richard Karrs, March 15, 2005) and at that time it was the opinion of the District staff that it would not be necessary to request expedited review of the application. However, we intend to continue monitoring the District's permit review process to ensure that any additional information needed to complete their review is provided in a timely manner. Once the CEC staff issues a proposed schedule for the licensing proceeding, we will again consult with the District staff regarding their review schedule and if it becomes necessary to request and pay for expedited review to meet the schedule, the applicant will do so.

Following is the applicant's proposed schedule for obtaining the preliminary and final DOCs:

Milestone	Date
Air permit application deemed complete	May 20, 2005
PDOC issued	July 30, 2005
FDOC issued	August 29, 2005

A PSD permit must be obtained from EPA Region 9 before construction of the proposed modification can commence. The applicant will be similarly diligent about monitoring EPA's permit review and providing additional information as required. As the PSD permit is not required as part of the AFC process, the issuance of the PSD permit does not affect the AFC review schedule.

4. Emissions Monitoring During CTG Commissioning Activities

Following completion of construction but before the CTG is available for commercial operation, the CTG must be tested, adjusted, tuned, and calibrated. Some of the operational and testing activities must take place before the dry low-NOx combustion system is tuned and before the SCR system is installed. The CTG experiences many startups and shutdowns and extensive low-load operation during this tuning and testing period. Emissions of NOx, CO, and VOC during the commissioning period are expected to be higher than during normal turbine operation; these higher emissions and air quality impacts are evaluated in Section 5.2.5.3.3 of the AFC.

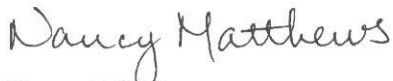
During the commissioning period, a continuous emissions monitoring system will be installed and operated to ensure compliance with commissioning emission limits. While the monitors will not be certified during the commissioning period, they will be calibrated daily to ensure that the collected data are accurate. The monitors in use during the commissioning period are those that will be used to demonstrate compliance with permit conditions and acid rain requirements throughout the life of the project. The applicant expects that the District will require monitoring of the following parameters during the commissioning period:

- firing hours
- fuel flow rates
- stack gas NO_x, CO, and O₂ or CO₂ concentrations

The applicant expects that monitored parameters will be recorded every 15 minutes. After first firing of the CTG, the detection range of the CEMs will be adjusted as necessary to accurately measure the CO and NO_x emissions concentrations throughout their ranges.

We appreciate the opportunity to provide this additional information. If you or your staff have any additional questions regarding the potential air quality impacts of the proposed project, please do not hesitate to contact us.

Sincerely,

A handwritten signature in cursive script that reads "Nancy Matthews".

Nancy Matthews

cc: Will Walters, Aspen Environmental
Mike Ringer, CEC
Jennifer Scholl, URS

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ALTERNATIVES

Appendix B (b) (1) (D): A description of how the site and related facilities were selected and the consideration given to engineering constraints, site geology, environmental impacts, water, waste and fuel constraints, electric transmission constraints, and any other factors considered by the applicant.

Response: Please refer to the Alternatives discussion below.

Appendix B (f) (1): A discussion of the range of reasonable alternatives to the project, or to the location of the project, including the no project alternative, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and an evaluation of the comparative merits of the alternatives. In accordance with Public Resources Code section 25540.6(b), a discussion of the applicant's site selection criteria, any alternative sites considered for the project, and the reasons why the applicant chose the proposed site.

Response: Please refer to the Alternatives discussion below.

Appendix B (f) (2): An evaluation of the comparative engineering, economic, and environmental merits of the alternatives discussed in subsection (f)(1).

Response: Please refer to the Alternatives discussion below.

The following analysis has been prepared to address the AFC requirements listed above.

OVERVIEW

A range of reasonable alternatives to the Pastoria Energy Facility 160 MW Expansion (PEF Expansion) project are identified and evaluated in this section. The alternatives include the "No Project" alternative (not adding the 160 MW expansion), alternative site location and design for constructing and operating a power generation facility, and alternative generating technologies. In addition, this section describes the site selection criteria uses in determining the location of the existing PEF.

The PEF Expansion consists of a nominal 160 MW simple cycle combustion turbine generator. The PEF Expansion project would increase the generating capacity of the existing PEF from 750 MW to a combined generating capacity of 910 MW. The PEF Expansion area will be approximately two acres located entirely within the existing PEF 31-acre site boundary. The PEF Expansion requires no modification to the existing PEF offsite linear facilities (e.g. electric transmission line, fuel gas supply line, or water supply line). The PEF Expansion will use the existing PEF administration and control, warehouse and shop, and water treatment buildings. Site access and onsite roadways are common with the existing

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PEF. Refer to Figure 3.1-1 of this application (05-AFC-1) that depicts the new facilities required for the PEF Expansion project within the footprint of the existing PEF.

NO PROJECT

The No Project Alternative would consist of not developing the PEF Expansion. The No Project Alternative was considered and rejected. The No Project Alternative would not meet the State of California's objective to license the most efficiently running power plants possible, as intended under PRC Section 25552, that meet the needs of the market, as demonstrated by the Southern California Edison (SCE) Request for Offers (RFO) for up to 1500 MW of new generation capacity. SCE is soliciting proposals for new generation facilities that meet specific criteria such as:

- Must achieve commercial operation between June 1, 2006, and August 1, 2008
- Prefer highly flexible (multiple daily starts, quick ramp rates, etc), peaking resources
- Must provide additional capacity in SP-15 control area

The PEF Expansion project meets these criteria.

Potential Environmental Impacts

The proposed PEF Expansion project will provide a flexible and efficient source of reliable electricity. The electricity will be produced consuming less fuel and discharging fewer air emissions when compared to other existing, older fossil fuel generation facilities in California in similar service.

ALTERNATIVE PROJECT SITE LOCATIONS AND DESIGN

The PEF 160 MW Expansion is proposed to be located on a two-acre site within the existing 31-acre PEF site. The PEF site was designed so that it could accommodate future electrical generation facilities. The reasons for selecting the site were stated in Section 3.11 of the PEF AFC (99-AFC-7) as follows:

- A supportive landowner for the plant site with available land with proper zoning in a supportive community
- A minimal number of involved landowners for project linears
- Access to natural gas fuel at competitive pricing

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- Access to an adequate water supply
- Access to an electric transmission connection to the Southern California market
- Minimal impact on visual resources
- Access to a potential baseload customer (California Department of Water Resources, Edmonston Pumping Plant)

For the PEF Expansion, proximity to all of the required interconnecting facilities (natural gas, electrical transmission, and water) as well as ownership by the Pastoria Energy Facility, LLC (the same owner as the existing PEF) a subsidiary of Calpine Corporation is important because it minimizes both environmental impacts and costs, and allows for a shorter construction period and more immediate supply to meet California's energy needs. Other benefits of the existing site for the PEF Expansion are the compatible land uses surrounding the project site (which are consistent with Kern County General Plan and Zoning), and that expansion at the existing PEF site would not cause any significant visual or noise impacts due to the distance from sensitive receptors and other land uses. Therefore other sites were dismissed from further consideration. As well, since the existing PEF was approved and constructed and commercial operations are expected to occur within the next 60 days, there are no reasonable alternative sites for the PEF Expansion.

ALTERNATIVE LINEAR FACILITIES

All of the linear facilities necessary to develop the PEF 160 MW Expansion have been constructed and are in place. Thus, no reasonable alternatives for the linear facilities were identified.

ALTERNATIVE PROJECT CONFIGURATIONS

The existing 750 MW PEF was the result of a wide array of design and operation considerations as described in 99-AFC-7. The main factors that affected the configuration included available gas turbine-generator sizes, economies of scale for both construction and operation of the plant (the existing PEF and the PEF Expansion), fuel supply logistics, power transmission capacities, and forecast market demand for merchant plant power. The existing PEF configuration consists of the latest generation of commercially demonstrated turbine technology. Because the existing PEF anticipated the addition of an expansion of similar generating capacity, no alternative configurations were identified for the 160 MW Expansion project.

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ALTERNATIVE TECHNOLOGIES

The proposed PEF 160 MW Expansion project will not be owned by a utility or by an affiliate selling to its affiliated utility. The project is therefore a “merchant plant” as defined by the CEC in its Electricity Report (CEC 1995). As a merchant plant, the project will be competing with other electricity generators in selling electricity in a deregulated market. Since the existing PEF has been approved and constructed and is currently expected to begin commercial operations within the next 60 days, no reasonable alternative technologies to meet the goal of operation of the existing PEF and the proposed PEF Expansion have been identified.

The addition of 160 MW of generating capacity to the existing PEF as proposed with the PEF Expansion project would meet the needs of Southern California for new reliable and highly flexible peaking resources. Because the existing PEF anticipated the addition of an expansion of similar generating capacity, no alternative technologies were identified for the 160 MW Expansion project.

REFERENCES

California Energy Commission (CEC). 1995. 1994 Biennial Electricity Report (ER94), P300-95-002. November.

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BIOLOGICAL RESOURCES

Appendix B (g) (1) ...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.

Response: Please refer to Exhibit 2 Biological Resources Materials for a copy of the memorandum from Russel Kokx dated May 13, 2005.

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EXHIBIT 2
BIOLOGICAL RESOURCES MATERIALS

- Memorandum from Russell Kokx to Jennifer Scholl dated May 13, 2005

MEMORANDUM

TO: Jennifer Scholl, URS Corporation
PEF Expansion AFC Project Manager

FROM Russell Kokx, Pastoria Energy Facility
CEC-approved Designated Biologist for Construction Compliance

DATE: May 13, 2005

RE: Biological Resources Survey Results for the Pastoria Energy Facility 160 MW
Expansion Area

Please accept the following memorandum as a brief report summarizing the results of a biological survey conducted on May 4, 2005 for the proposed site of the Pastoria Energy Facility 160 MW Expansion (PEF Expansion).

This memorandum includes the following sections intended to address CEC technical reviewers with the information necessary to address Data Adequacy Requests regarding biological resources:

- 1.0 Overview
- 2.0 Observations from the May 4, 2005 Site Visit
- 3.0 Summary of Project Area Biological Resources Prior to Construction of the Existing PEF
- 4.0 Discussion of Potential Occurrence of Sensitive Animal Species
- 5.0 Discussion of Significant Changes to the Project Area During Construction of the Existing PEF

1.0 OVERVIEW

The area of proposed PEF Expansion is shown on the following figures included in the PEF Expansion AFC (05-AFC-1):

- **Figure 3.1-1, PEF Expansion General Arrangement** shows the location of the PEF Expansion within the existing PEF arrangement on a line drawing.
- **Figure 3.1-2, Photograph Showing Locations of PEF Expansion Facilities** shows the PEF Expansion from two perspectives.

As shown on these figures and discussed in additional detail below, the PEF Expansion site is within an area currently permitted for permanent disturbance and not proposed for reclamation. The Expansion site is located between the western cooling tower and Unit One within the fenced plant site area and is currently covered with gravel and actively disturbed for construction-related activities associated with the existing PEF.

2.0 OBSERVATIONS FROM THE MAY 4, 2005 SITE VISIT

During the May 4, 2005 site visit, the only animal species observed were, California ground squirrels, Audubon cottontail rabbits, House finches, European starling, and House sparrows. Other species that have been occasionally observed in the area of the PEF Expansion include: Long-tailed weasels, Raccoons, Deer mice, Western rattlesnakes, and Side-blotched lizards. No plant species were observed, because no plants currently exist within the proposed PEF Expansion area.

3.0 SUMMARY OF PROJECT AREA BIOLOGICAL RESOURCES PRIOR TO CONSTRUCTION OF THE EXISTING PEF

This section includes a summary of project area biological resources observed prior to construction of the existing PEF. Table 1 includes a wildlife target list and Table 2 includes a target plant list.

Prior to construction of the existing PEF, previous disturbances in the project area included cattle ranching, and evidence of pipeline construction. Other land uses in the vicinity of the existing PEF site are active agriculture (grape vineyards) north of site and active gravel mining operations south west of the site.

Prior to the construction of the existing PEF, the area vegetation was described as Non-native Grassland (42.000 Keeler-Wolf), dominants included Soft chess brome (*Bromus hordeaceus*), Wild oats (*Avena fatua*), Ripgut brome (*Bromus hordeaceus*), annual wildflower displays included Miniature lupines (*Lupinus bicolor*), Popcorn flower (*Plagiobothrys canascens*), Birds eye gillia (*Gillia tricolor*)r and Red stem filaree (*Erodium cicutarium*).

Common wildlife observed within the project area included the following: Mammals; Coyote (*Canis latrans*), Raccoons (*Procyon lotor*), California ground squirrels (*Spermophilus beechyi*), and Audubon cottontail rabbit (*Sylvilagus auduboni*.); Birds; Common raven, Loggerhead shrike, Say's phoebe, Western kingbird and Lark sparrow; Reptiles; Western

TABLE 1
WILDLIFE TARGET SPECIES LIST

Common Name	Scientific Name	Listing Status ¹		Survey ² Methods
Mammals		Federal	State	
San Joaquin Antelope Squirrel	<i>Ammospermophilus nelsoni</i>	none	T	HC, DS, TR
Giant Kangaroo Rat	<i>Dipodomys ingens</i>	E	E	HC, DS, TR, NS
Tipton Kangaroo Rat	<i>Dipodomys nitratoides nitratoides</i>	E	E	HC, DS, TR
San Joaquin Pocket Mouse	<i>Perognathus inornatus inornatus</i>	none	SC	HC, TR
Tehachapi Pocket Mouse	<i>Perognathus alticolus inexpectatus</i>	SC	SC	HC, TR
American Badger	<i>Taxidea taxus</i>	none	SC	HC, TR, DS
San Joaquin Myotis	<i>Myotis yumanensis oxalis</i>	SC	SC	HC, NS
Townsend's Big-eared Bat	<i>Plecotus townsendii townsendii</i>	SC	SC	HC, NS
Western Mastiff Bat	<i>Eumops perotis</i>	SC	SC	HC, NS
Tulare grasshopper mouse	<i>Onychomys torridus tularensis</i>	SC	SC	HC, TR
San Joaquin Kit Fox	<i>Vulpes macrotis mutica</i>	E	T	HC, TR, DS
Birds				
California Condor	<i>Gymnogyps californianus</i>	E	E	Preconst.
Cooper's Hawk (Nesting)	<i>Accipiter cooperi</i>	none	SC	Preconst.
Sharp-shinned Hawk (nesting)	<i>Accipiter striatus</i>	none	SC	Preconst.
Golden Eagle	<i>Aquila chrysaetos</i>	none	SC	Preconst.
Ferruginous hawk	<i>Buteo regalis</i>	SC	SC	Preconst.
Swainson's Hawk (nesting)	<i>Buteo swainsoni</i>	none	T	Preconst.
White-tailed Kite	<i>Elanus leucurus</i>	none	P	Preconst.
Northern Harrier (nesting)	<i>Circus cyaneus</i>	none	SC	Preconst.
Burrowing Owl	<i>Athene cunicularia</i>	none	SC	Preconst.
Merlin (wintering)	<i>Falco columbarius</i>	none	SC	Preconst.
Prairie Falcon (nesting)	<i>Falco mexicanus</i>	none	SC	Preconst.
Peregrine Falcon	<i>Falco peregrinus anatum</i>	none	E	Preconst.
Long-eared Owl (nesting)	<i>Asio otus</i>	none	SC	Preconst.
Short-eared Owl	<i>Asio flammeus</i>	none	SC	Preconst.
California Horned Lark	<i>Eremophila alpestris actia</i>	none	SC	Preconst.
Purple Martin (nesting)	<i>Progne subis</i>	none	SC	Preconst.
Loggerhead Shrike	<i>Lanius ludovicianus</i>	SC	SC	Preconst.
Tricolored Blackbird	<i>Agelaius tricolor</i>	SC	SC	Preconst.
Long-billed Curlew	<i>Numenius americanus</i>	SC	SC	Preconst.
San Joaquin LeConte's Thrasher	<i>Toxostoma lecontei macmillanorum</i>		SC	Preconst.
Vaux's Swift	<i>Chaetura vauxi</i>	SC	SC	Preconst.

TABLE 1 (CONTINUED)
WILDLIFE TARGET SPECIES LIST

Common Name	Scientific Name	Listing Status ¹		Survey ² Methods
Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	E	E	Preconst.
Bald Eagle	<i>Haliaeetus leucocephalus</i>	T	E	Preconst.
Amphibians				
Tehachapi Slender Salamander	<i>Batrachoseps stebbinsi</i>	SC	T	HC, SO
Yellow-blotched Salamander	<i>Ensatina eschscholtzii croceator</i>	none	SC	HC, SO
Western Spadefoot	<i>Scaphiopus hammondi</i>	SC	SC	HC, SO
California Red-legged Frog	<i>Rana aurora draytonii</i>	T	SC	HC
Reptiles				
Blunt-nosed Leopard Lizard	<i>Gambelia sila</i>	E	E	HC, TR
Southern Rubber Boa	<i>Charina bottae umbratica</i>	SC	T	HC, NS, SO
San Joaquin Coachwhip	<i>Masticophis flagellum ruddocki</i>	SC	SC	HC, TR
Southwestern Pond Turtle	<i>Clemmys marmorata pallida</i>	SC	SC	HC
San Diego Horned Lizard	<i>Phrynosoma coronarum blainvillei</i>	SC	SC	HC, TR
California Legless Lizard	<i>Anniella pulchra pulchra</i>	SC	SC	HC, TR, SO
Invertebrates				
Valley Elderberry Longhorn Beetle	<i>Desmocerus californicus dimorphus</i>	T	none	HC, Preconst.

¹ Listing Status: E= Endangered, T= Threatened, SC= Species of concern, P= Proposed 1B CNPS listed plants rare, threatened, or endangered.

² Survey Method: HC= Habitat classification, TR= Line transects, DS= Den or burrow surveys, NS= night spotlighting surveys, TR= Live trapping for rodents, Preconst.= Initial surveys & Pre-construction surveys

rattle snake, (*Crotalus viridis*), Long-nosed snake (*Rheinocheilus lecontei*) and Side-blotched lizard (*Uta stansburiana*.)

4.0 DISCUSSION OF POTENTIAL OCCURRENCE OF SENSITIVE ANIMAL SPECIES

The following discussions summarize the potential occurrence of sensitive animal species in the area of the existing PEF.

Blunt-nosed Leopard Lizards: Results of Blunt-nosed leopard lizard surveys conducted for the construction of the existing fuel gas supply pipeline, determined that a population of Blunt-nosed leopard lizards was located within a mile (west) of the existing PEF plant site. While the habitat is not as suitable to the Blunt-nosed leopard lizard due to the relative abundance of non-native grasses, it is considered potential habitat due to its proximity to

TABLE 2
TARGET PLANT SPECIES LIST

Common Name	Scientific Name	Listing Status			Survey Methods	Flowering Period	Potential Occurrence
		Federal	State	Other			
Plants							
Bakersfield Cactus	<i>Opuntia basilaris</i> var. <i>treleasei</i>	E	E	1B	HC, TR	May	None
Piute Mountains Navarretia	<i>Navarretia setiloba</i>	PT	0	1B	HC, TR	April – June	Low
Palmer's Mariposa Lily	<i>Calochortus palmeri</i> var. <i>palmeri</i>	SC	0	1B	HC, TR	May – July	None
Kern Buckwheat	<i>Eriogonum kennedyi</i> var. <i>pinicola</i>	SC	0	1B	HC, TR	May – June	None
Coulter's Goldfields	<i>Lasthenia glabrata</i> ssp. <i>Coulteri</i>	SC	0	1B	HC, TR	February - June	Low
Comanche Point Layia	<i>Layia leucopappa</i>	SC	0	1B	HC, TR	April - May	Low
Flax-like Monardella	<i>Monardella linoides</i> ssp. <i>Oblonga</i>	SC	0	1B	HC, TR	June - August	Low
Gypsum loving Delphinium	<i>Dephinium gypsophilum</i> ssp. <i>Gypsophilum</i>	CEQA	0	1B	HC, TR	February - June	High
Tejon Poppy	<i>Eschscholtzia lemmonii</i> ssp. <i>Kernensis</i>	CEQA	0	List 4	HC, TR	March - April	Low

other areas of habitat. This observation coupled with the dynamic nature of the lizard population suggests that additional monitoring or surveys may be necessary if construction-related activities for the PEF Expansion require disturbance or activity west of the plant site.

San Joaquin Valley Kit Fox: To date no San Joaquin Valley Kit fox have been observed in the project area despite numerous surveys conducted in the project area for both the plant site and linear components. Previous documentation of San Joaquin Valley Kit foxes in reports are based on survey protocol that requires documentation of all burrows that fall into the appropriate size categories, no verifications have been made of their presence either through direct observation, or sign (i.e. scat, tracks, hair). No impact to San Joaquin Kit Fox habitat is expected from the PEF Expansion.

Western Spadefoot Toad: During weekly inspections in April 2005, several amphibian larvae were observed at the mouth of the culvert in the water retention pond, north of the PEF Expansion area. These larvae were determined to be Western Spadefoot Toad (*Scaphiopus hammondi*) a species of special concern. By April 27, 2005, all of the toads had completed metamorphosis and left the pond.

San Joaquin Coachwhip: No observations of San Joaquin Coachwhips have been made within 2 miles of the existing PEF site.

Burrowing Owl: In Spring 2004, an active burrowing owl was observed, the burrowing owl location was over a mile east of the existing PEF site and was observed to have hatched 5 chicks. No burrowing owls were observed during the May 4, 2005 survey.

Golden Eagle: As many as 12 individual Golden Eagle have been observed during surveys and construction monitoring of the existing PEF. No suitable nesting sites are available in the vicinity of any of the project components, the Eagles that remain in the vicinity are likely to nest at higher elevation than the PEF site, therefore, no direct impacts are expected.

Loggerhead Shrike: Loggerhead shrikes have been observed along the perimeter fencing around the existing PEF plant site. The Shrikes appear to be indifferent to most human activity and actively hunt from fence perches. Loggerhead Shrikes preferred nesting is thick shrubs and trees which only exist on Pastoria Creek and around the orchards, no nests were detected within the project area during the May 4, 2005 site visit.

Ferruginous Hawk: Several Ferruginous Hawks were observed along the fuel gas supply pipeline and surrounding habitat during construction monitoring of the existing PEF, during winter months.

Northern Harrier: Northern Harrier are occasionally observed hunting north of the PEF plant site. No nesting activity was observed during any of the pre-activity surveys or monitoring of the existing PEF.

Prairie Falcon: Prairie falcons have been observed in the fall and spring months during construction monitoring of the existing PEF in that area of the Access Road and north of the Plant site. Although Prairie falcons have been known to nest on transmission towers, no nests have been observed and no other suitable habitat for nesting exists in the area of the PEF site.

Coopers Hawk: No Coopers hawks have been observed around the existing PEF plant site.

Sharp-shinned Hawk: Sharp-shinned hawks have been observed, during construction monitoring of the existing PEF, in the fall, winter and early spring along the heavily vegetated creeks, and around the orchards in the vicinity of the fuel gas supply pipeline. While Sharp-shinned hawks have historically nested lower in the hills and valleys, they are known to nest only at higher elevations.

Tri-colored Blackbirds: Tri-colored blackbirds, were observed during construction monitoring of the existing PEF, in flocks of up to 30 individuals foraging southwest of the existing PEF plant site, along the existing transmission line and in small numbers along the fuel gas supply pipeline route from April through early May. The birds preferred nesting location is large cattail or tule stands and no suitable habitat exists near the existing PEF facilities.

Short-eared Owl: Several Short-eared owls were observed in the non-native grassland around the northern terminus of the fuel gas supply pipeline during construction monitoring in the winter months. Short-eared owls typically nest from the central Valley North of California to North Western Alaska. None have been observed around the existing PEF plant site.

Bald Eagle: Bald eagles are commonly observed wintering (December through March) around the existing PEF project area. No direct impacts are expected from additional construction within the existing PEF site from the PEF Expansion.

Long-billed Curlew: Long-billed curlews were observed in flocks of up to over 100 individuals in the grasslands around the northern portion of the fuel gas supply pipeline from late December until early March, during construction monitoring of the existing PEF. Long-billed curlews nest in North Eastern California and are winter visitors in Southern California. No Long-billed curlews have been observed around the existing PEF plant site.

5.0 DISCUSSION OF SIGNIFICANT CHANGES TO THE PROJECT AREA DURING CONSTRUCTION OF THE EXISTING PEF

The following discussion describes the occurrence of Blunt-nosed leopard lizards encountered during project description and how biological resources compliance materials were amended to address the mitigation measures implemented during construction activities of the existing PEF.

Prior to the proposed construction of the fuel gas supply pipeline for the existing PEF, a population of Blunt-nosed leopard lizards (*Gambelia sila*) was discovered during the

required pre-activity surveys conducted in October 2003. The population was previously undiscovered along the pipeline route and the species was considered unlikely to occur. Because the species was determined unlikely to occur, Blunt-nosed leopard lizards were not included in the original Biological Opinion and no mitigation measures were included in the Biological Resource Mitigation Implementation and Monitoring Plan (BRMIMP).

The initial observation of Blunt-nosed leopard lizards was on October 16, 2003. Temperatures during the month of October were in the eighties and many juveniles were observed along the pipeline right-of way, approximately 1.5 miles east/northeast of the PEF plant site.

As required under the Biological Opinion, the USFWS, CDFG, and CEC were notified of the discovery of a population of Blunt-nosed leopard lizard and standard mitigation measures were immediately implemented and Blunt-nosed leopard lizards were added to the Worker Awareness Environmental Training Program.

A request for reinitiating Section 7 consultation was also filed with the Environmental Protection Agency on November 7, 2003. An Amendment to the Biological Assessment was submitted to add Blunt-nose Leopard Lizards (*Gambelia sila*) and suggest additional mitigation measures, including re-routing the pipeline route to avoid the lizards, to be implemented in order to avoid take of the species. Copies of the draft amendment were distributed to the U.S. Environmental Protection Agency, CEC, CDFG, USFWS. The amendment was approved by the agencies and construction of the re-routed pipeline has been completed.

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CULTURAL RESOURCES

Appendix B (g) (2) (D): A summary of contacts and communications with, and responses from, Native American representatives who may have an interest in heritage lands and/or resources potentially affected by the proposed project (CEC Staff Note: Provide a summary of contacts and communication (copies of correspondence sent to Native Americans) with and responses from Native Americans who may have heritage concerns regarding the proposed project. Although the proposed changes are within the project footprint, the project has changed).

Response: Following the submittal of the AFC on April 29, 2005, the applicant confirmed that a small area of native soil (within the existing PEF plant site, as shown on Figure 3.1-3 of 05-AFC-1) would be impacted as part of the construction activities of the PEF Expansion. Subsequent to this confirmation, Native American notifications were initiated on May 19, 2005. Please refer to Exhibit 3 Cultural Resources Materials for an example of the letters that were sent as part of the Native American coordination on June 2, 2005. These letters were sent to the following addressees:

Clarence Atwell, Chairperson
Santa Rosa Rancheria
P.O. Box 8
Lemoore, CA 93245

Carol A. Pulido
15011 Lockwood Valley Road
Frazier Park, CA 93225

Neil Peyron, Chairperson
Tule River Indian Tribe
P.O. Box 589
Porterville, CA 93258

Kathy Morgan, Chairperson
Tejon Indian Tribe
2234 4th Street
Wasco, CA 93280

Puilulaw Khus
2001 San Bernardo Creek
Morro Bay, CA 93442

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Ernie Garcia
Tejon Indian Tribe
23437 Via Gayo
Valencia, CA 91355

Ron Wermuth, Chairperson
Kern Valley Indian Council
P.O. Box 1010
Lake Isabella, CA 93240

Robert L. Gomez Jr.
2619 Driller Avenue
Bakersfield, CA 93306

Delia Dominguez
Kitanemuk & Yowlumne Tejon Indians
981 N. Virginia
Covina, CA 91722

Appendix B (h) (1) (A): Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed; (CEC Staff Note: Include SB 18 (Chap. 905, Statutes of 2004) Amends the Government Code. See Governor's Office of Planning and Research web site www.opr.ca.gov/SB182004 for additional information.)

Response: The applicant has reviewed this statute and has determined that it does not apply to the PEF Expansion project. The statute is applicable to those projects that require an underlying land use designation or zoning change in order to be implemented. No land use changes were required for the existing PEF and no additional land use changes will be required for the PEF Expansion.

Appendix B (h) (2) A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).

Response: See response to Appendix B (h) (1) (A) above.

Appendix B (h) (4) A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.

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Response: The proposed PEF Expansion will use the existing linear components of the existing PEF and therefore no new construction outside of the existing PEF plant site boundaries is anticipated. Therefore, no permits triggering State Historical Preservation Office requirements will be triggered (i.e., Army Corps of Engineers or California Department of Fish and Game).

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EXHIBIT 3
CULTURAL RESOURCES MATERIALS

- Copy of Native American Notification Letter dated June 2, 2005



June 2, 2005

Clarence Atwell, Chairperson
Santa Rosa Rancheria
P.O. Box 8
Lemoore, CA 93245

**Re: Pastoria Energy Facility 160 MW Expansion Application for Certification
(05-AFC-1) Project, Kern County, California**

Dear Clarence Atwell:

Calpine Corporation, Pastoria Energy Facility, LLC, proposes to expand the existing Pastoria Energy Facility located in Lebec, southern Kern County. The PEF Expansion consists of a nominal 160 MW simple cycle combustion turbine generator. The PEF Expansion area will be approximately two acres located entirely within the existing PEF 31-acre site boundary. The PEF Expansion requires no modification to the existing PEF offsite linear facilities (e.g. electric transmission line, fuel gas supply line, or water supply line). The PEF Expansion will use the existing PEF administration and control, warehouse and shop, and water treatment buildings. Site access and onsite roadways are common with the existing PEF. For your information the attached figures show the following:

- Figure 1.2-1 provides a regional overview
- Figure 3.1-4A shows the location of the existing plant site and water and transmission lines
- Figure 3.1-1 of this application depicts the new facilities required for the PEF Expansion project within the footprint of the existing PEF

The general project area, as well as the specific project location, has been the subject of an archival records search at the Southern San Joaquin Valley Information Center of the California Historical Resources Information System at the California State University, Bakersfield. The project location and surrounding areas have been subjected to various archaeological surveys. These past surveys detected three prehistoric isolates within the boundaries of the existing project location, though there was no detection of any prehistoric or ethnohistoric archaeological sites within the boundaries of the existing Pastoria Energy Facility.

URS Corporation
130 Robin Hill Road, Suite 100
Santa Barbara, CA 93117
Tel: 805.964.6010
Fax: 805.964.0259



Clarence Atwell
June 2, 2005
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Your name has been obtained from the Native American Heritage Commission (NAHC) list of individuals/organizations that may be able to provide additional information regarding cultural resources in the project area. If you have any specific knowledge of cultural resources that might be potentially impacted by this project, or if you have any comments or questions concerning the project, please contact Ms. Christine Hacking at URS Corporation by telephone, fax, mail, or email at your earliest convenience (130 Robin Hill Road, Suite 100, Santa Barbara, CA 93117; tel. (805) 964-6010; fax (805) 964-0259; email – christine_hacking @urscorp.com). If URS does not hear from you within two weeks of receipt of this letter, we shall assume you have no comments regarding this project.

Sincerely,
URS Corporation

Christine Hacking, M.A., R.P.A.
Archaeologist

Enclosure: Figures from 05-AFC-1

Online Label Record (Label 1 of 9)

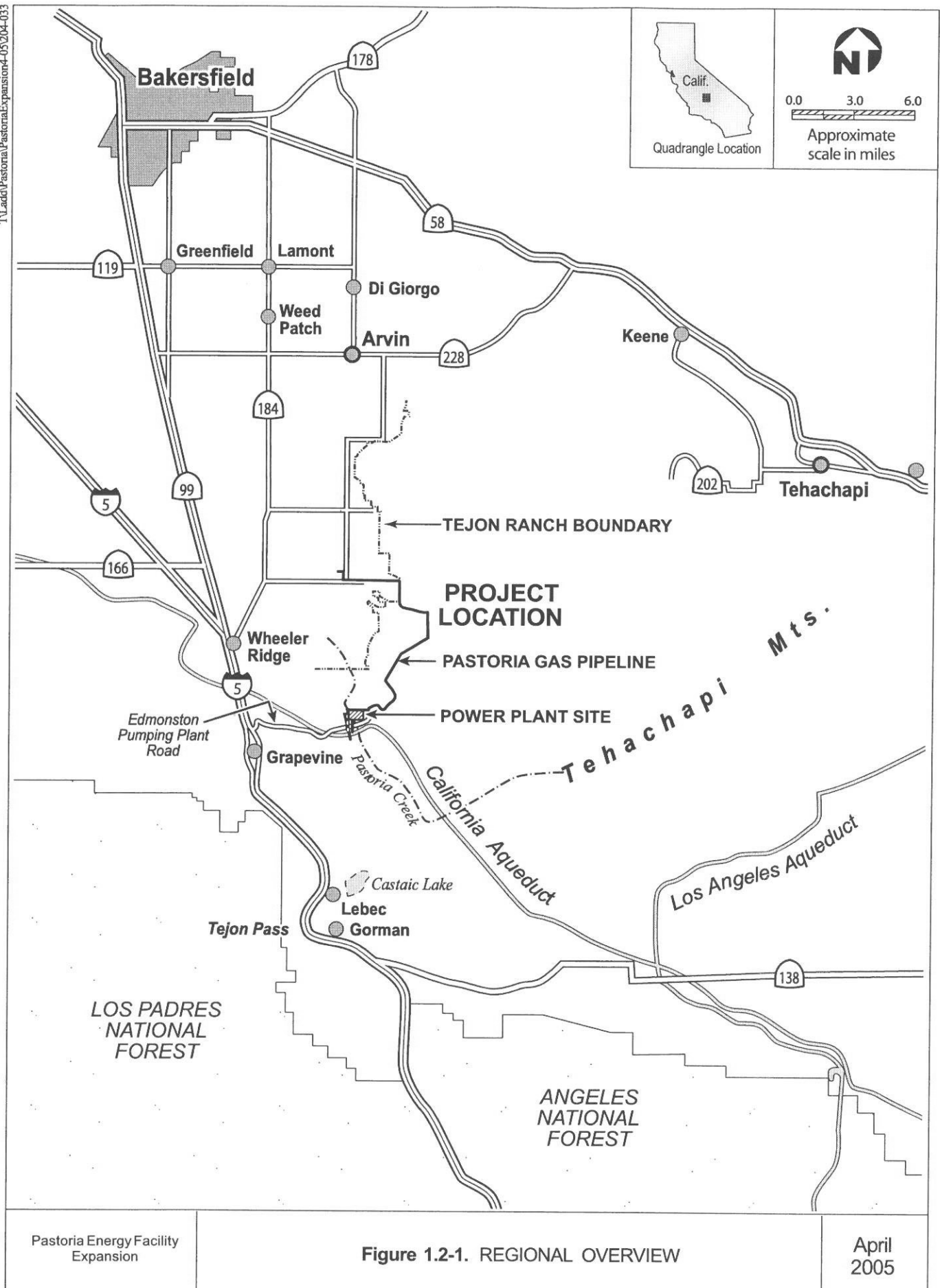
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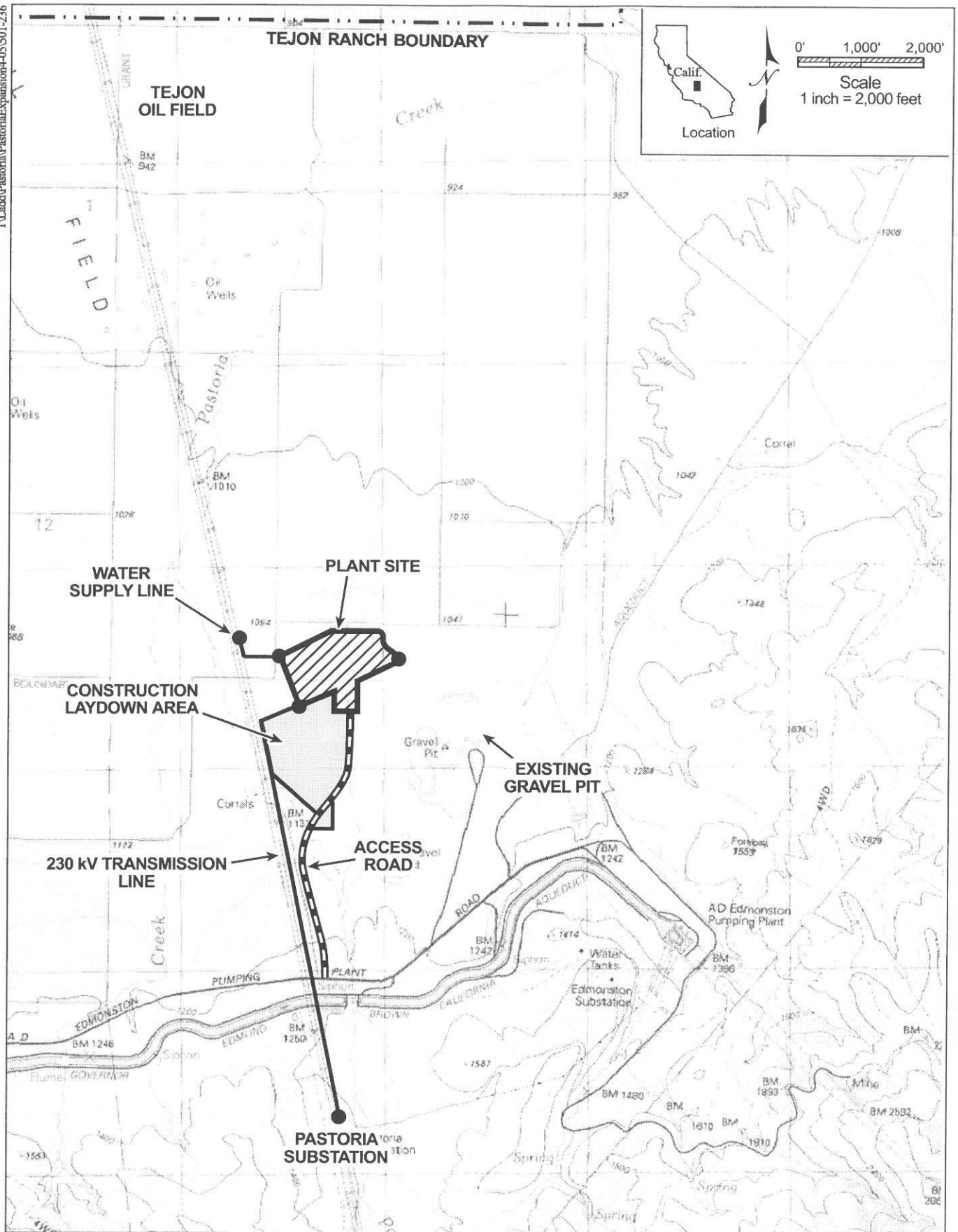
Print Date:	06/02/2005	Priority Mail® Postage:	
Ship Date:	06/02/2005	Total:	\$3.85
Weight:	1 lb 0 oz		

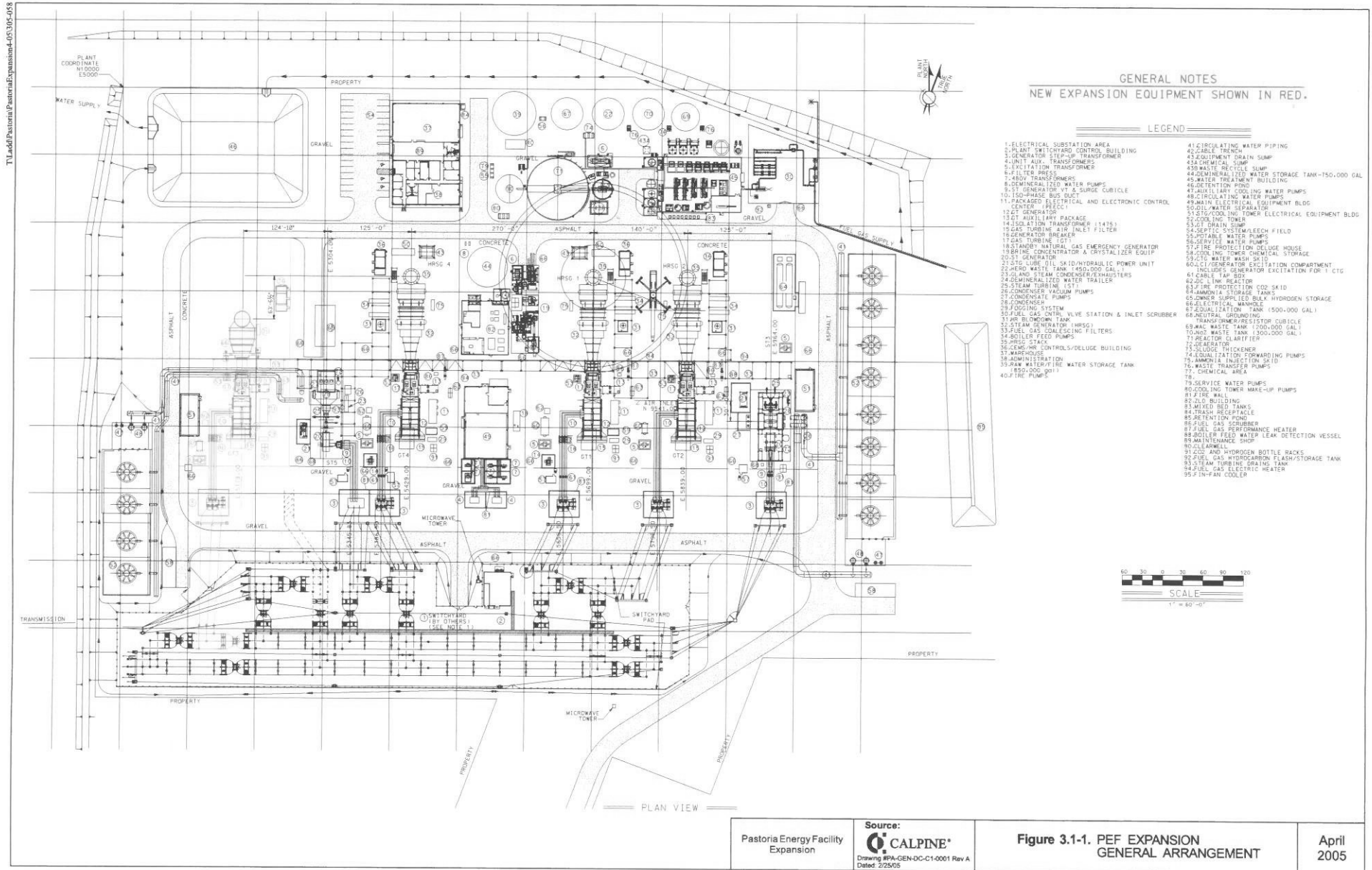
From: CHRISTINE K HACKING
URS CORPORATION
130 ROBIN HILL RD STE 100
SANTA BARBARA CA 93117-3153

To: CLARENCE ATWELL
SANTA ROSA RANCHERIA
PO BOX 8
LEMOORE CA 93245-0008

* Regular Priority Mail rates apply. There is no fee for Delivery Confirmation service on Priority Mail service with use of this electronic rate shipping label. Delivery information is not available by phone for the electronic rate.







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PROJECT OVERVIEW

Appendix B (a) (1) (E): In an appendix to the application, a list of current assessor's parcel numbers and owners' names and addresses for all parcels within 500 feet of the proposed transmission line and other linear facilities, and within 1000 feet of the proposed power plant and related facilities.

Response: The existing PEF plant site, as well as the PEF Expansion site, is located on land owned by the Tejon Ranchcorp. Since the PEF Expansion will use the existing PEF linears therefore the provision of the property owner information only applies to the existing plant site. The contact information for the property owner (plant site only) is as follows:

Tejon Ranchcorp
P.O. Box 1000
Lebec, CA 93243

Please refer to Section 3.2.2 of 05-AFC-1 for the complete legal description of the existing PEF plant site. Also please refer to Exhibit 4 that includes a new Appendix 1 to 05-AFC-1 created to comply with the requirement.

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EXHIBIT 4

APPENDIX 1 PROPERTY OWNER INFORMATION

- Errata Appendix 1 to 05-AFC-1 Adjacent Property Owner Information

**ERRATA APPENDIX 1 TO 05-AFC-1
ADJACENT PROPERTY OWNER DATA
PASTORIA ENERGY FACILITY 160 MW EXPANSION**

The existing PEF plant site, as well as the PEF Expansion site, is located on land owned by the Tejon Ranchcorp. Since the PEF Expansion will use the existing PEF linears therefore the provision of the property owner information only applies to the existing plant site. The contact information for the property owner (plant site only) is as follows:

Tejon Ranchcorp
P.O. Box 1000
Lebec, CA 93243

Refer to Section 3.2.2 of 05-AFC-1 for the complete legal description of the existing PEF plant site.

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SOCIOECONOMICS

In addition to the responses to the Data Adequacy requests for Socioeconomics below, a correction has been made to Section 5.10.2.3 (page 5.10-4) of the AFC regarding construction job numbers for the PEF Expansion. Refer to Exhibit 5 for the Errata, replacement page.

Appendix B (g) (7) (B) (vi): An estimate of the applicable school impact fees.

Response: Since there are no new buildings proposed as part of the PEF Expansion, no new building fees are expected to be assessed for the PEF Expansion project.

Appendix B (g) (7) (B) (vii): An estimate of the total construction payroll and an estimate of the total operation payroll;

Response: For the PEF Expansion, the construction payroll is estimated to be \$16 million for the 12-month construction period. It is expected that the bulk of the construction payroll will be spent in the study area communities. Since no additional operations staff will be added for the PEF Expansion, the incremental annual operation payroll is zero.

Appendix B (g) (7) (B) (viii): An estimate of the expenditures for locally purchased materials for the construction and operation phases of the project; and

Response: An estimated \$1 million worth of materials and equipment will be purchased locally during construction of the PEF Expansion and an estimated additional \$100,000 will be spent locally each year for supplies during operation of the PEF Expansion.

Appendix B (g) (7) (B) (ix): An estimate of the capital cost of the project of the potential impacts on tax revenues from construction and operation of the project.

Response: The estimated capital cost of the PEF Expansion is \$70 million. Once constructed, the first year property tax from the PEF Expansion project is estimated to be around \$2.1 million.

As noted above it is estimated that \$1 million worth of materials and equipment will be purchased locally during construction of the PEF Expansion. An estimated additional \$100,000 will be spent each year for supplies during operation of the PEF Expansion. The current sales tax in Kern County is 7.25 percent. Of this percentage, one percent will accrue to the County and about 6.25 percent will accrue to the State. Therefore, sales tax from construction-related materials and equipment would be \$72,500 (of which \$10,000 will accrue to the County and \$62,500 will accrue to the State). The sales tax on the \$100,000 for

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operational supplies will generate approximately \$7,250 (of which \$1000 will accrue to the County and \$6,250 will accrue to the State.

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EXHIBIT 5
SOCIOECONOMICS MATERIALS

- Errata Sheet for 05-AFC-1 Section 5.10.2.3 page 5.10-4

TABLE 5.10-2
DISTRIBUTION OF AVERAGE NUMBER OF NON-LOCAL WORKER
HOUSEHOLDS IN STUDY AREA COMMUNITIES
(CONSTRUCTION AND OPERATION)¹

Community	Existing PEF Operations Phase				Construction Phase for PEF Expansion			
	Permanent Employees	School-Aged Children	Other Dependents	Total	Contractor Staff	School-Aged Children	Other Dependents	Total
Bakersfield	9	8	9	26	10	10	10	30
Delano	2	2	2	6	2	2	2	6
Wasco	1	1	1	3	1	1	1	3
Arvin	1	1	1	3	1	1	1	3
Other areas of Kern County and LA County ²	0	0	0	0	1	1	1	3
Total	13	12	13	38	15	15	15	45

¹ These numbers are based on the average number of non-local workers and on an average household size of 3.04 persons. The distribution was developed proportionate to the existing populations of the listed communities.

² Includes McFarland, Shafter, Taft, Tehachapi, and other areas of Kern and Los Angeles Counties.

5.10.2.3 Employment and Economy

Consistent with the methodology used in 99-AFC-7, which used the IMPLAN Model to estimate the number of direct and indirect employment associated with construction, construction of the PEF Expansion will generate an estimated average of ~~175~~145 construction jobs at the plant site during construction. Using a multiplier of 3.23 for construction employment for major facilities in Kern County, these ~~175~~145 direct jobs would support an additional ~~565~~323 secondary jobs in Kern County during the construction period.

5.10.2.4 Housing

Construction of the PEF Expansion will result in an increase of 15 non-local workers. As discussed in Section 5.10.2.2, it is estimated that ten households will locate in Bakersfield, two households will locate in Delano, and the three remaining households will relocate in another area of Kern County (including Arvin, McFarland, Shafter, Maricopa, Taft, Wasco, and Tehachapi), or in Southern California. The availability of housing resources is presented in Table 5.10-5 of Section 5.10 of 99-AFC-7 included for reference as part of Attachment I of this application, and is considered to be adequate to meet this demand without significantly lowering the vacancy rates in the affected communities. At peak, the 15 non-local workers will require about ten units in Bakersfield, two units in Delano, and three additional units distributed among other areas of Kern County (including Arvin, McFarland, Shafter, Maricopa, Taft, Wasco, and Tehachapi), or in Southern California.

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SOILS

Appendix B (g) (1): ...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.

Response: As confirmed by CEC Technical staff in the Data Adequacy Worksheets, information on soils is located as follows in 05-AFC-1: Volume I, Section 5.5, pages 5.4-1 to 5.4-2; Volume I, Section 7, Table 7-1, pages 7-11 to 7-12 and pages 7-32 to 7-37; Volume II, Attachment C, Section 5.4, pages 5.4-1 to 5.4-25; and Volume I, Section 9, Conditions of Certification, Soil & Water 1, 2, 3 and 4, pages 57 to 59. The only information that was not adequately addressed is information related to the effect of power plant emissions on surrounding soil-vegetation that is addressed below.

Appendix B (g) (15) (C) (iii): The effect of power plant emissions on surrounding soil-vegetation systems

Response: There is a concern in some areas that emissions from a generating facility, principally nitrogen (NO_x) from the combustors or drift from the cooling towers, would have an adverse effect on soil-vegetation systems in the project vicinity. This is principally a concern where environments that are highly sensitive to nutrients or salts, such as serpentine habitats, are downwind of the project. In the case of the PEF Expansion (160 MW simple cycle unit), only NO_x from the combustors could have an adverse impact on the surrounding vegetation since there is no cooling tower component proposed as part of the Expansion project.

Modeled ground level concentrations of criteria air pollutants (e.g. nitrogen oxides, sulfur dioxide and carbon monoxide) resulting from operational emissions are below significance levels as evaluated in AFC Section 5.2.5.4.4 and Table 5.2-26. However, particulate matter ($\text{PM}_{2.5}$ and PM_{10}) levels continue to exceed state and federal standards, which was also the case for the existing PEF. These significance levels and ambient air quality standards have been developed to protect public health, crops, soils, natural vegetation, and wildlife among other things. In particular, the thresholds for significance for impacts to vegetation and ecosystems published by the U.S. Forest Service for Class I Wilderness Areas are intended to provide a worst-case analysis for highly sensitive ecosystems. However, the maximum modeled airborne concentrations of NO_2 and SO_2 from the proposed plant indicate that the potential gaseous concentrations and total nitrogen and sulfur deposition values would be well below levels of concern for California plants and soils in Class I Wilderness Areas

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published by the USFS. This indicates that crops, native vegetation, wildlife and soils in the project vicinity would not be adversely impacted by NO₂ or SO₂ emissions.

Appendix B (h) (1) (A): Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;

Response: Table 7-1 from 05-AFC-1, Section 7.5.4 includes an identification of the LORS related to construction and operation of a power plant. Exhibit 6 includes additional discussion of the applicability of each of the LORS as it pertains to the PEF Expansion project for Agriculture and Soils.

Appendix B (h) (2): A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).

Response: The revised Section 7.5.4, included in Exhibit 6, addresses this request.

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EXHIBIT 6
REVISED LORS INFORMATION

- Revised LORS for Soils
- Revised LORS for Transmission
- Revised LORS for Water Resources
- Revised LORS Table for Soils, Transmission and Water Resources

This Exhibit includes a narrative discussion of the LORS applicable to the PEF Expansion in the areas of Electrical Transmission, Soils, and Water Resources that amends these sections in Section 7.0 of 05-AFC-1.

7.3.4 Electrical Transmission

The power plant switchyard and outlet line electrical transmission line shall meet or exceed the electrical, mechanical, civil and structural requirements of state and federal agencies and industry standards as described in the following sections.

7.3.4.1 Federal Authorities and Administering Agencies

Applicable Federal LORS pertaining to electrical transmission line address aviation safety and communications interferences as they relate to the transmission line routes for the PEF. However, no new transmission lines are included as part of the PEF Expansion. The administering authorities for these LORS are listed in Section 7.3.4 of the AFC. LORS addressing hazard prevention (i.e., fire hazard, hazardous shock, nuisance shock, and noise) are covered under in the AFC in Section 7.3 Project Siting, Design, and Construction; Section 7.4.2, Public/Worker Safety and Health Protection; and Section 7.5.12, Noise.

7.3.4.2 State Authority and Administering Agency

Several state regulations applied to the construction of the existing transmission line connection to the Pastoria substation including: CEC requirements for power plant licensing, CPUC General Order 95 "Rules for Overhead Electric Line Construction", Title 8 of the California Code and Regulations (Title 8) and Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders" related to compliance with the Division of Occupation Safety and Health worker safety requirements, and Cal-ISO standards.

7.3.4.3 Local Authorities and Administering Agencies

The Kern County General Plan, Energy Element includes policies related to energy development in Kern County and are not applicable to the PEF Expansion project.

7.3.4.4 Industry Codes and Standards

Unless specifically stated otherwise, the design of all structures and facilities will be based on the codes, specifications, industry standards and regulations, and other reference documents in effect at the time of design. Applicable codes and industry standards with respect to the project's electrical engineering design criteria, construction and operation are summarized in Appendix F, Electrical Engineering Design Criteria. Applicable sections of systems control design criteria, as summarized in Appendix G, Control Systems Engineering Design Criteria, will also be considered. These Appendices, from 99-AFC-7, are included in Volume II of the AFC in Attachment A Project Description

Materials from 99-AFC-7. The following industry standards will apply to the construction of the PEF transmission facilities: Cal-ISO standards, National Electric Code (NEC), National Electric Safety Code (NESC), Southern California Edison Interconnection Standards, and IEEE Grounding Standards.

7.5.4 Agriculture and Soils

The following discussion only includes identifies those LORS that are applicable to the construction and operation of the PEF Expansion as they relate to the protection of soils resource and protection of surface water quality from project induced erosion impacts.

7.5.4.1 Federal Authorities and Administering Agencies

The Federal Water Pollution Control Act of 1972; Clean Water Act of 1977 (including its 1987 amendments). These authorities establish requirements for any facility or activity which has or which will discharge wastes (including sediment due to accelerated erosion) that may interfere with the beneficial uses of receiving waters.

The administering agency for the above authority is the California Regional Water Quality Control Board, Central Valley Region 5 (RWQCB), Central Valley Region under the direction of the State Water Resources Control Board (SWRCB).

Applicability. A new or amended Construction Storm Water Pollution Prevention Plan (SWPPP) will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

Soil Conservation Service (SCS), National Engineering Handbook (1983), Sections 2 and 3. The US Department of Agriculture prescribes standards of technical excellence for the SCS, now renamed the Natural Resources Conservation Service (NRCS) for the planning, design, and construction of soil conservation practices.

The administering agency for the above authority is the NRCS.

Applicability. This requirement was addressed as part of the licensing of the existing PEF and is not applicable to the PEF Expansion.

7.5.4.2 State Authorities and Administering Agencies

California Public Resources Code § 25523(a); CCR §§ 1752, 1752.5, 2300-2309, and Chapter 2, Subchapter 5, Article 1, Appendix B, Part (i). The Act provides for protection of environmental quality. With respect to the PEF Expansion, the Act requires

submission of information to the CEC concerning potential environmental impacts, and the CEC's decision on the AFC must include consideration of environmental protection.

The administering agency for the above authority is the CEC.

Applicability. Submittal of the PEF Expansion AFC (05-AFC-1) and AFC processing constitutes compliance with this requirement.

Guidelines for Implementation of the California Environmental Quality Act of 1970, Appendix G, 14 CCR § 15000 – 15387; California Environmental Quality Act (CEQA), California Public Resources Code § 21000 et. seq. The CEQA guidelines specify that: "A project will normally have a significant effect on the environment if it will ...[¶] (q) Cause substantial flooding, erosion or siltation; ...[¶](y) Convert prime agricultural land to non-agricultural use or impair the agricultural productivity of prime agricultural lands".

The administering agency for the above authority is the CEC.

Applicability. Submittal of the PEF Expansion AFC (05-AFC-1) and AFC processing constitutes compliance with this requirement.

California Porter-Cologne Water Quality Control Act of 1969, as amended; California Water Code, § 13260 - 13269; 23 CCR Chapter 9. The code requires adequate protection of water quality by appropriate design, sizing and construction of erosion and sediment controls. Discharge of waste earthen material into surface waters resulting from land disturbance may require the filing of a report of waste discharge (Water Code § 13260(a)), and provides for the issuance of waste discharge requirements with respect to the discharge of any waste that can affect the quality of the waters of the state. Concerning potential surface water pollution from project area runoff, the waste discharge requirements may incorporate requirements based on the following sources of recommended methods and procedures:

- State Water Resources Control Board. 1996. *Erosion and Sediment Control Field Manual*.
- US EPA. 1973. *Processes, Procedures and Methods to Control Pollution Resulting From All Construction Activity*. Presents information on processes, procedures, and methods for controlling sediment, storm water, and pollutants from construction activities.
- California Department of Resources Conservation. 1978. *Erosion and Sediment Control Handbook*. Provides procedures by which physical and climatic data and erosion control practices can be considered in making an assessment of a site for

determining the need for an erosion control plan and for preparing an erosion control plan.

The administering agencies for the above authority are the CEC, the RWQCB, and the State Water Resources Control Board.

Applicability. The existing PEF was found in compliance with all of these requirements based upon the approval and implementation of the construction and operations SWPPP programs. A new or amended Construction Storm Water Pollution Prevention Plan (SWPPP) will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

7.5.4.3 Local Authorities and Administering Agencies

California Land Conservation Act (Williamson Act), Cal. Government Code Title 5, Part 1, Chapter 7 Section §§ 51200-51295. The Williamson Act provides for lowered property taxes for lands maintained in agricultural and certain open space uses. The landowner enters into a contract with the county or city to restrict land uses to those compatible with agriculture, wildlife habitat, scenic corridors, recreational use, or open space. In return, the local authorities calculate the property tax assessment based on the actual use of the land instead of its potential value assuming full commercial development. To be eligible, the land must be designated by a city or county as agricultural preserve, scenic highway corridor, or wildlife habitat area; or it must be actively used for the three years immediately preceding the beginning of the contract as a salt pond, managed wetland, recreational or open space area.

The administering agency for the above authority is the Kern County Planning Commission and the Kern County Planning Department.

Applicability. Cancellation of the Williamson Act contract occurred as part of the existing PEF. Therefore, no further compliance is required for the PEF Expansion.

Kern County General Plan – Land Use/Conservation/Open Space Element (2004). This element sets forth policies addressing soils, water, mineral resources, and vegetation.

The administering agency for the above authority is Kern County Planning Department.

Applicability. The existing PEF was found to be consistent with the Kern County General Plan. It is expected that since implementation of the PEF Expansion will occur within the

boundaries of the existing PEF plant site, that Kern County will also determine that the PEF Expansion is consistent with the Kern County General Plan.

Hydrology Manual for the County of Kern, California (1992). Any drainage systems design will meet the specified criteria.

The administering agency for the above authority is Kern County Planning Department.

Applicability. The Kern County CBO determined that the existing PEF was designed to meet the criteria of the Kern County Hydrology Manual. The drainage system for the PEF Expansion will also be designed consistent with this criteria and will be subject to review and approval from the Kern County CBO prior to the start of construction.

Kern County Code of Building Regulation Grading Ordinance, Chapter 17.28. This chapter outlines how project construction must comply with grading requirements.

The administering agency for the above authority is the Kern County Engineering & Survey Services Department, Building Inspection Division.

Applicability. The Kern County CBO determined that the existing PEF met the grading requirements of the Kern County Grading Ordinance. The grading for the PEF Expansion will also be designed to meet the Grading Ordinance requirements and will be subject to review and approval from the Kern County CBO prior to the start of construction.

7.5.4.4 Industry Codes and Standards

No laws, ordinances, regulations, standards, or codes are applicable.

Appendix B (h) (4): A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.

Response: There are no permits required for Agriculture and Soils for the PEF Expansion project. NPDES permitting requirements are covered under the Water Resources Data Requests below.

7.5.5 Water Resources

The following LORS are applicable or potentially applicable to the proposed project in the context of water resources.

7.5.5.1 Federal Authorities and Administering Agencies

Clean Water Act of 1977 (including 1987 amendments) § 402, 33 USC § 1342; 40 CFR Parts 122 - 136. The Clean Water Act requires a National Pollution Discharge Elimination System (NPDES) permit for any discharge of pollutants from a point source to waters of the United States. This law and its regulations apply to storm water and other discharges into waters of the United States. The Clean Water Act requires a general construction activities permit for discharge of storm water from construction sites disturbing 1 acre or more. This federal permit requirement is administered by the State of California Water Resources Control Board according to the Construction Storm Water Program.

Dischargers whose projects disturb 1 or more acres of soil or whose projects disturb less than 1 acre but are part of a larger common plan of development that in total disturbs 1 or more acres, are required to obtain coverage under the General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 99-08-DWQ). Construction activity subject to this permit includes clearing, grading and disturbances to the ground such as stockpiling, or excavation, but does not include regular maintenance activities performed to restore the original line, grade, or capacity of the facility. The Construction General Permit requires the development and implementation of a Storm Water Pollution Prevention Plan (SWPPP).

The administering agencies for the above authority are the RWQCB, and the EPA, Region 9.

Applicability. Construction activities at the PEF Expansion site will be performed in accordance with a new or amended Construction SWPPP. The Monitoring Plan developed for the existing PEF, was prepared in accordance with the State of California's NPDES General Permit for Storm Water Discharges Associated with Construction Activity. The Construction SWPPP for the PEF Expansion will include control measures including Best Management Practices to reduce erosion and sedimentation as well as other pollutants associated with vehicle maintenance, material storage and handling, and other activities occurring at the project site.

Clean Water Act § 311; 33 USC § 1321; 40 CFR Parts 110, 112, 116, and 117. The Act requires the reporting of any prohibited discharge of oil or hazardous substance.

The administering agencies for the above authority are EPA, Region 9; RWQCB; and the California Office of Emergency Services (OES).

Applicability. The existing PEF was found in compliance with all of these requirements based upon the approval and implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF

Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

7.5.5.2 State Authorities and Administering Agencies

California Porter-Cologne Water Quality Control Act; California Water Code § 13000 - 14957; Division 7, Water Quality. The Porter-Cologne Water Quality Control Act authorizes the state to develop and implement a statewide program for the control of the quality of all waters of the state. The Act establishes the state board and each of the regional boards as the principal state agencies with primary responsibility for the coordination and control of water quality. Under § 13172, siting, operation, and closure of waste disposal sites are regulated. The Act requires classification of the waste and the disposal site. Discharges of waste must comply with the groundwater protection and monitoring requirements of the Resource Conservation and Recovery act of 1976, as amended (42 USC Sec. 6901 *et seq.*), and any federal acts which amend or supplement the Resource Conservation and Recovery Act of 1976, together with any more stringent requirements necessary to implement this revision or Article 9.5 (commencing with Section 25208) of Chapter 6.5 of Division 20 of the Health and Safety Code. The discussion above in Section 7.5.4.2 is also applicable. The project will comply with the regulations set forth in this act.

The administering agency for the above authority is the CEC, State Water Resources Control Board, and the Regional Water Quality Control Board, Central Valley Region 5 (RWQCB).

Applicability. The existing PEF was found in compliance with all of these requirements based upon the approval and implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

California Constitution, Article 10 § 2. This article prohibits the waste or unreasonable use of water, and regulates the method of use and method of diversion of water. The project will comply with the State constitution.

The administering agency for the above authority is the RWQCB.

Applicability. The existing PEF was found in compliance with all of these requirements based upon the approval and implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF

Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

State Water Resources Control Board, Resolution 75-58 (June 18, 1975). The Board prescribes state water quality control policy on the use and disposal of inland water used for power plant cooling.

The administering agencies for the above authority are the RWQCB and the CEC.

Applicability. The existing PEF was found in compliance with this requirement based upon the implementation of the zero liquid discharge system and the determination by that CEC staff that the water entitlements were adequate to meet more than the needs of the project. The water use associated with the PEF Expansion project will be minimal and can be accommodated within the water entitlements secured for the existing PEF. Therefore, the PEF Expansion will be consistent with this policy.

California Water Code § 13260 - 13269; 23 CCR Chapter 9. The code requires the filing of a report of waste discharge and provides for the issuance of waste discharge requirements with respect to the discharge of any waste that can affect the quality of the waters of the state. The waste discharge requirements will serve to enforce the relevant water quality protection objectives of the Water Quality Control Plan and federal, technology-based effluent standards applicable to the PEF Expansion. With respect to potential water pollution from construction activities, the waste discharge requirements may incorporate requirements based on the Clean Water Act § 402(p) and implementing regulations at 40 CFR Parts 122 seq., as administered by the RWQCB.

The administering agency for the above authority is the RWQCB.

Applicability. The existing PEF was found in compliance with all of these requirements based upon the approval and implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

California Water Code §§ 13271 - 13272; 23 CCR §§ 2250 - 2260. These code sections require reporting of releases of specified reportable quantities of hazardous substances or sewage (§ 13271) and releases of specified quantities of oil or petroleum products (§ 13272), when the release is into, or where it will likely discharge into, waters of the state. For releases into or threatening surface waters, a "hazardous substance" and its reportable quantities are those specified at 40 CFR § 116.5, pursuant to § 311(b)(2) of the Federal Clean Water Act, 33 USC § 1321(b)(2). For releases into or threatening ground water, a

"hazardous substance" is any material listed as hazardous pursuant to the California Hazardous Waste Control Act, Health & Safety Code §§ 25100 - 2520.24, and the reportable quantities are those specified at 40 CFR Part 302.

The administering agencies for the above authority are the RWQCB and the Governor's Office of Emergency Services.

Applicability. Although such releases are not anticipated, the project would comply with the reporting requirements. Further, the existing PEF was found in compliance with all of these requirements based upon the approval and implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 - 2309, and Chapter 2 Subchapter 5, Article 1, Appendix B, Part (1). The code provides for the inclusion of requirements in the CEC's decision on an AFC to assure protection of environmental quality and requires submission of information to the CEC concerning proposed water resources and water quality protection.

The administering agency for the above authority is the CEC.

Applicability. Submittal of the PEF Expansion AFC (05-AFC-1) and AFC processing constitutes compliance with this requirement.

California Environmental Quality Act, Public Resources Code § 21000 et seq.; CEQA Guidelines, 14 CCR § 15000 et seq.; Appendix G. The CEQA Guidelines (Appendix G) contain definitions of projects which can be considered to cause significant impacts to water resources. The project is not expected to cause significant impacts to water resources, as described in Section 5.5.2.

The administering agency for the above authority is the CEC.

Applicability. Submittal of the PEF Expansion AFC (05-AFC-1) and AFC processing constitutes compliance with this requirement.

The Monterey Agreement. The principles outlined in the Monterey Agreement provide for increased agricultural water supply reliability, lower costs, water transfers, and more flexibility in operating the State Department of Water Resources and State Water Project. The Agreement between the State Department of Water Resources and State Water Project contractors was signed in December 1994. The Kern County Water Agency

(KCWA) is a State Water Project contractor, and the Wheeler Ridge-Maricopa Water Storage District is a member KCWA agency.

The administering agencies for the above agreement are the State Department of Water Resources and the Kern County Water Agency.

Applicability. The project will not affect the policies of this agreement. Further, the existing PEF was found in compliance with this requirement based upon the implementation of the zero liquid discharge system and the determination by that CEC staff that the water entitlements were adequate to meet more than the needs of the project. The water use associated with the PEF Expansion project will be minimal and can be accommodated within the water entitlements secured for the existing PEF. Therefore, the PEF Expansion will be consistent with this policy.

Clean Water Act § 401, Waiver of Discharge Requirements. Obtain certification that discharges will comply with Clean Water Act.

The administering agency for the above authority is the RWQCB.

Applicability. The existing PEF was issues a 401 Certification from the RWCQB as a result of the implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

7.5.5.3 Local Authorities and Administering Agencies

Kern County Water Agency. The Kern County Water Agency (KCWA), created by the California Legislature in 1961, has primary authority to acquire and contract for water supplies for Kern County, with additional authority to control flood and storm waters, protect the quality of underground waters, and conduct investigations relative to water resources. The KCWA coordinates management of the water supplies of Kern County, with particular emphasis on State Water Project supplies. The Pastoria Energy Facility which includes the PEF Expansion will receive water from the Wheeler Ridge-Maricopa Water Storage District, which in turn contracts for State Water Project supplies from the KCWA.

The administering agencies are the Kern County Water Agency and the Wheeler Ridge-Maricopa Water Storage District.

Applicability. The project will not affect the policies of this agency. Further, the existing PEF was found in compliance with this requirement based upon the implementation of the zero liquid discharge system and the determination by that CEC staff that the water entitlements were adequate to meet more than the needs of the project. The water use associated with the PEF Expansion project will be minimal and can be accommodated within the water entitlements secured for the existing PEF. Therefore, the PEF Expansion will be consistent with this policy.

Kern County General Plan; Section 1.3 Physical and Environmental Constraints.

Kern County will not permit new development on lands that are environmentally unsound and unable to support such development. This includes regulations regarding areas of shallow groundwater, construction of sewage disposal facilities, and construction within flood hazard or flood channel areas.

The administering agencies for the above authority are the Kern County Planning Department and the Kern County Engineering & Survey Services Department, as applicable.

Applicability. The Kern County CBO determined that the existing PEF was designed to meet the requirements of the regulations of the Kern County General Plan related to Physical and Environmental Constraints. The PEF Expansion will also be designed consistent with these regulations and will be subject to review and approval from the Kern County CBO prior to the start of construction.

District Standard Specifications for Water Distribution Facilities. Project installation should be in compliance with District requirements.

The administering agency is the Wheeler Ridge-Maricopa Water Storage District.

Applicability. The PEF Expansion will use the existing PEF water line. Therefore the PEF Expansion will not subject to compliance with these specifications.

Kern County Floodplain Management Plan, Chapter 17.48, Kern County Code of Building Regulations. Requirements should be met in regards to building in the floodplain.

The administering agency is the Kern County Engineering & Survey Services Department.

Applicability. The Kern County CBO determined that the existing PEF was designed to meet the requirements of the criteria of the Kern County Floodplain Management Plan.

The PEF Expansion will also be designed consistent with this criteria and will be subject to review and approval from the Kern County CBO prior to the start of construction.

7.5.5.4 Industry Codes and Standards

No laws, ordinances, regulations, standards, or codes are applicable beyond those discussed in Section 7.4.

UPDATED TABLE 7-1
PASTORIA ENERGY FACILITY 160 MW EXPANSION (05-AFC-1)
SUMMARY OF APPLICABLE LORS AND COMPLIANCE FOR THE AREAS OF
ELECTRIC TRANSMISSION, WATER RESOURCES AND SOILS

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
7.4.3 Electric Transmission		Federal	47 CFR § 15.25, "Operating Requirements, Incidental Radiation."	FAA	Mitigation for any device that causes communications interference.
		State	20 CCR, Appendix B, Subdiv. (a), (d) (g) and Subdiv. (a), (h), §§ 1741 through 1744 and § 1752 "Information Requirements for a Non-geothermal Application."	CEC	Compliance with applicable laws for safety and reliability.
			Cal. Pub. Res. Code, § 25000 et seq., Warren-Alquist Act, § 25520 Subdivision (g).	CEC	Provide description of transmission line including the right of way. No additional action expected.
			Title 8 of the California Code and Regulations (Title 8)	Division of Occupational Safety and Health (DOSH)	Occupational health and safety
			General Order 95 (GO-95) CPUC, "Rules for Overhead Electric Line Construction".	CPUC	Not applicable to the PEF Expansion.
			Articles 35, 36, 37 of the "High Voltage Electric Safety Orders)	DOSH	Occupational health and safety
			Cal-ISO Standards	Cal-ISO	
			Radio & Television Interference (RI/TVI) Criteria.	CEC or CPUC	Not applicable to the PEF Expansion.
		Local	Kern County General Plan, Energy Element (2004).	Kern County Planning Department	Not applicable to the PEF Expansion.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
		Industry	National Electric Code		
			Southern California Edison Interconnection Standards		
			IEEE Grounding Standards		
7.5.4 Agriculture and Soils	Section 5.4, Agriculture and Soils	Federal	Federal Water Pollution Control Act of 1972; Clean Water Act of 1977 (including 1987 amendments).	California Regional Water Quality Control Board, Central Valley Region 5 (RWQCB)	Meet discharge requirements relative to sediment due to accelerated erosion through the implementation of Construction and Operational Storm Water Pollution Prevention Plans (SWPPPs).
			Soil Conservation Service (SCS), National Engineering Handbook (1983), Sections 2 and 3.	USDA Natural Resources Conservation Service (NRCS).	Implement standards for the planning, design, and conservation of soil conservation practices. This requirement was addressed as part of licensing of the existing PEF.
		State	Cal. Pub. Res. Code § 25523(a); CCR §§ 1752, 1752.5, 2300 - 2309, and Chapter 2, Subchapter 5, Article 1, Appendix B, Part (i).	CEC	Submission of information to the CEC concerning potential environmental impacts. Submittal of the PEF Expansion AFC and AFC processing constitutes compliance with this requirement.
			Guidelines for Implementation of CEQA, Appendix G; 14 CCR § 15000 – 15387.	CEC	Evaluate erosion or siltation and conversion of agricultural lands.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			California Porter-Cologne Water Quality Control Act of 1969, as amended; Cal. Water Code, § 13260 - 13269; 23 CCR Chapter 9.	CEC, the RWQCB and the State Water Resources Control Board	Adequate protection of water quality by appropriate design, sizing and construction of erosion and sediment controls; obtain waste discharge requirements concerning potential surface water pollution from project area runoff. This requirement will be addressed through the preparation of new or amended Construction and Operational SWPPPs.
		State/Local	California Land Conservation Act (Williamson Act). Cal. Government Code Title 5, Part 1, Chapter 7 Section §§ 51200-51295.	Department of Conservation, Division of Land Resources Protection; administered by the Kern County Planning Department.	Cancellation of the Williamson Act contract occurred as part of the existing PEF. No additional action expected.
		Local	Kern County General Plan – Land Use/Conservation/Open Space Element, 2004.	Kern County Planning Department and Kern County Planning Commission	Existing PEF was found to be consistent with the Kern County General Plan. It is expected that the PEF Expansion will also be found to be consistent.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			Hydrology Manual For the County of Kern (1992)	Kern County Planning Department	Design drainage system to meet criteria. The Kern County CBO determined that the existing PEF was designed to meet the criteria of the Kern County Hydrology Manual. The drainage system for the PEF Expansion will also be designed consistent with this criteria and will be subject to review and approval from the Kern County CBO prior to the start of construction.
			Kern County Code of Building Regulation Grading Code.	Kern County Engineering & Survey Services Department, Building Inspection Division.	Comply with grading code chapter 17.28. The Kern County CBO determined that the existing PEF met the grading requirements of the Kern County Grading Ordinance. The grading for the PEF Expansion will also be designed to meet the Grading Ordinance requirements and will be subject to review and approval from the Kern County CBO prior to the start of construction.
		Industry	None applicable.	--	--

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
7.5.5 Water Resources	Section 5.5, Water Resources	Federal/State	Clean Water Act § 402, 33 USC § 1342; 40 CFR Parts 122 – 136; State Construction Storm Water Program.	RWQCB, and the EPA, Region 9	<p>National Pollution Discharge Elimination System (NPDES) permit for construction activities. General Permit for Discharges of Storm Water Associated with Construction Activity (Construction General Permit, 99-08-DWQ). Preparation of a SWPPP and Monitoring Program.</p> <p>PEF Expansion will conform to the Construction Activity Stormwater Permit and Industrial Activity Stormwater permits obtained for the existing PEF.</p> <p>Construction activities at the PEF Expansion site will be performed in accordance with a new or amended Construction SWPPP. The Monitoring Plan developed for the existing PEF, was prepared in accordance with the State of California's NPDES General Permit for Storm Water Discharges Associated with Construction Activity. The Construction SWPPP for the PEF Expansion will include control measures including Best Management Practices to reduce erosion and sedimentation as well as other pollutants associated with vehicle maintenance, material storage and handling, and other activities occurring at the project site.</p>

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			Clean Water Act § 311; 33 USC § 1321; 40 CFR Parts 110, 112, 116, and 117.	EPA, Region 9; RWQCB, and the California Office of Emergency Services (OES).	Reporting of any prohibited discharge of oil or hazardous substance. The existing PEF was found in compliance with all of these requirements based upon the approval and implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
		State	California Porter-Cologne Water Quality Control Act of 1969, as amended; Cal. Water Code, § 13000-14957; Division 7, Water Quality.	CEC, the RWQCB and the State Water Resources Control Board	Siting, operation and closure of waste disposal requires submission of waste and site classification for waste discharge permit. The existing PEF was found in compliance with all of these requirements based upon the approval and implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			California Constitution, Article 10 § 2.	State Water Resources Control Board	Avoid the waste or unreasonable uses of water. Regulates methods of use and methods of diversion of water. The existing PEF was found in compliance with all of these requirements based upon the approval and implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			State Water Resources Control Board, Resolution 75 - 58 (June 18, 1975).	State Water Resources Control Board and the CEC	Comply with policy on the use and disposal of inland water used for power plant cooling. The existing PEF was found in compliance with this requirement based upon the implementation of the zero liquid discharge system and the determination by that CEC staff that the water entitlements were adequate to meet more than the needs of the project. The water use associated with the PEF Expansion project will be minimal and can be accommodated within the water entitlements secured for the existing PEF. Therefore, the PEF Expansion will be consistent with this policy.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			California Water Code § 13260 - 13269; 23 CCR Chapter 9.	RWQCB	<p>The code requires the filing of a report of waste discharge and provides for the issuance of waste discharge requirements with respect to the discharge of any waste that can affect the quality of the waters of the state. The waste discharge requirements will serve to enforce the relevant water quality protection objectives of the Water Quality Control Plan and federal, technology-based effluent standards applicable to the PEF Expansion. With respect to potential water pollution from construction activities, the waste discharge requirements may incorporate requirements based on the Clean Water Act § 402(p) and implementing regulations at 40 CFR Parts 122 seq. The existing PEF was found in compliance with all of these requirements based upon the approval and implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.</p>

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			California Water Code §§ 13271 – 13272; 23 CCR §§ 2250 - 2260.	RWQCB, and the Governor's Office of Emergency Services	Reporting of releases of reportable quantities of hazardous substances or sewage and releases of specified quantities of oil or petroleum products. Although such releases are not anticipated, the project would comply with the reporting requirements. Further, the existing PEF was found in compliance with all of these requirements based upon the approval and implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.
			California Public Resources Code § 25523(a); 20 CCR §§ 1752, 1752.5, 2300 - 2309, and Chapter 2 Subchapter 5, Article 1, Appendix B, Part (1).	CEC	Requires information concerning proposed water resources and water quality protection. Submittal of the PEF Expansion AFC (05-AFC-1) and AFC processing constitutes compliance with this requirement.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			California Environmental Quality Act, Public Resources Code § 21000 <i>et seq.</i> ; CEQA Guidelines, 14 CCR § 15000 <i>et seq.</i> ; Appendix G.	CEC	Definitions of projects that can be considered to cause significant impacts to water resources. The project is not expected to cause significant impacts to water resources, as described in Section 5.5.2. Submittal of the PEF Expansion AFC (05-AFC-1) and AFC processing constitutes compliance with this requirement.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			The Monterey Agreement.	State Department of Water Resources and the Kern County Water Agency	The principles outlined in the Monterey Agreement provide for increased agricultural water supply reliability, lower costs, water transfers, and more flexibility in operating the State Department of Water Resources and State Water Project. The Agreement between the State Department of Water Resources and State Water Project contractors was signed in December 1994. The Kern County Water Agency (KCWA) is a State Water Project contractor, and the Wheeler Ridge-Maricopa Water Storage District is a member KCWA agency. The project will not affect the policies of this agreement. Further, the existing PEF was found in compliance with this requirement based upon the implementation of the zero liquid discharge system and the determination by that CEC staff that the water entitlements were adequate to meet more than the needs of the project. The water use associated with the PEF Expansion project will be minimal and can be accommodated within the water entitlements secured for the existing PEF. Therefore, the PEF Expansion will be consistent with this policy.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			Clean Water Act § 401, Waiver of Discharge Requirements.	RWQCB	Obtain certification that discharges will comply with Clean Water Act. The existing PEF was issued a 401 Certification from the RWQCB as a result of the implementation of the construction and operations SWPPP programs. A new or amended Construction SWPPP will be prepared prior to the start of construction to address the construction of the PEF Expansion. The existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
		Local	Kern County Water Agency.	The Kern County Water Agency (KCWA) and Wheeler Ridge-Maricopa Water Storage District	KCWA has primary authority to acquire and contract for water supplies for Kern County, with additional authority to control flood and storm waters, protect the quality of underground waters, and conduct investigations relative to water resources. The PEF that includes the PEF Expansion will receive water from the Wheeler Ridge-Maricopa Water Storage District, which in turn contracts for State Water Project supplies from the KCWA. The project will not affect the policies of this agency. Further, the existing PEF was found in compliance with this requirement based upon the implementation of the zero liquid discharge system and the determination by that CEC staff that the water entitlements were adequate to meet more than the needs of the project. The water use associated with the PEF Expansion project will be minimal and can be accommodated within the water entitlements secured for the existing PEF. Therefore, the PEF Expansion will be consistent with this policy.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			Kern County General Plan, Section 1.3 – Physical and Environmental Constraints (2004).	The administering agencies are the Kern County Planning Department and the Kern County Engineering & Survey Services Department, as applicable	Kern County will not permit new development on lands that are environmentally unsound and unable to support such development. This includes regulations regarding areas of shallow groundwater, construction of sewage disposal facilities, and construction within flood hazard or flood channel areas. The Kern County CBO determined that the existing PEF was designed to meet the requirements of the regulations of the Kern County General Plan related to Physical and Environmental Constraints. The PEF Expansion will also be designed consistent with these regulations and will be subject to review and approval from the Kern County CBO prior to the start of construction.
			Kern County Code of Building Regulations, Chapter 17.20.	Kern County Engineering & Survey Services Department Kern County Building Inspection Division	Proposed development (i.e., leach field disposal system) must be in accordance with specific standards.

TABLE 7-1 (CONTINUED)
PASTORIA ENERGY FACILITY 160 MW EXPANSION
SUMMARY OF LORS AND COMPLIANCE

LORS Section	AFC Section	Jurisdiction	Authority	Administering Agency	Requirements/Compliance
			Wheeler Ridge-Maricopa Water Storage District Standard Specifications for Water Distribution Facilities.	Wheeler Ridge-Maricopa Water Storage District	Project installations should be constructed in compliance with District requirements. The PEF Expansion will use the existing PEF water line. Therefore the PEF Expansion will not subject to compliance with these specifications.
			Kern County Floodplain Management Plan, Chapter 17.48, Kern County Code of Building Regulations.	Kern County Engineering & Survey Services Department.	Requirements should be met in regards to building in the floodplain. The Kern County CBO determined that the existing PEF was designed to meet the requirements of the criteria of the Kern County Floodplain Management Plan. The PEF Expansion will also be designed consistent with this criteria and will be subject to review and approval from the Kern County CBO prior to the start of construction.
		Industry	None applicable.	--	--

**PASTORIA ENERGY FACILITY 160 MW EXPANSION PROJECT
SUPPLEMENT TO APPLICATION FOR CERTIFICATION
Responses to CEC Staff Data Adequacy Requests
Dated June 9, 2005
05-AFC-1**

TRANSMISSION SYSTEM ENGINEERING

Appendix B (i) (2) (A) A discussion of the need for the additional electric transmission lines, substations, or other equipment, the basis for selecting principal points of junction with the existing electric transmission system, and the capacity and voltage levels of the proposed lines, along with the basis for selection of the capacity and voltage levels.

Response: Please refer to Exhibit 7 Transmission System Materials for a copy of the System Impact Study prepared for this facility by Southern California Edison Company dated May 13, 2005. This study was prepared at the instruction of the California Independent System Operator (CAISO). A complete copy of the Study including the appendices has been submitted to the CEC under separate cover.

Appendix B (i) (2) (B) A discussion of the extent to which the proposed electric transmission facilities have been designed, planned, and routed to meet the transmission requirements created by additional generating facilities planned by the applicant or any other entity.

Response: Applicant is not aware of any additional generating facilities planned by the Applicant or any other entity.

Appendix B (b) (2) (C) A detailed description of the design, construction, and operation of any electric transmission facilities, such as power lines, substations, switchyards, or other transmission equipment, which will be constructed or modified to transmit electrical power from the proposed power plant to the load centers to be served by the facility. Such description shall include the width of rights of way and the physical and electrical characteristics of electrical transmission facilities such as towers, conductors, and insulators. This description shall include power load flow diagrams which demonstrate conformance or nonconformance with utility reliability and planning criteria at the time the facility is expected to be placed in operation and five years thereafter;

Response: Please refer to Exhibit 7 Transmission System Materials for a copy of the System Impact Study dated May 13, 2005. The load flow diagrams, included as Appendices to the Study have been submitted to the CEC under separate cover. The mitigation required for overloads will be fully addressed in the Facilities Study. Southern California Edison (SCE) will provide the Applicant with a Facilities Study Agreement by June 22. The Applicant then has 10 business days to authorize and fund the study agreement. The tariff required SCE to complete the Facility Study within 90 days of receiving the signed Facility Study Agreement and the associated funds.

Appendix B (h) (1) (A) Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the

PASTORIA ENERGY FACILITY 160 MW EXPANSION PROJECT
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Responses to CEC Staff Data Adequacy Requests
Dated June 9, 2005
05-AFC-1

application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;

Response: The PEF Expansion project will comply with all applicable laws, ordinances, regulations and standards as described in Exhibit 6 LORS Materials that include both a discussion of the applicability of the Transmission System-related LORS to the PEF Expansion project as well as a table that also lists the LORS applicable to construction and operation of the transmission system.

Appendix B (h) (1) (B) Tables which identify each agency with jurisdiction to issue applicable permits and approvals or to enforce identified laws, regulations, standards, and adopted local, regional, state and federal land use plans, and agencies which would have permit approval or enforcement authority, but for the exclusive authority of the commission to certify sites and related facilities.

Response: The PEF Expansion project will comply with all applicable laws, ordinances, regulations and standards. Refer to Exhibit 6 LORS Materials for a discussion of the applicability of the Transmission System-related LORS to the PEF Expansion project.

Appendix B (h) (2) A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).

Response: The PEF Expansion project will comply with all applicable laws, ordinances, regulations and standards. Refer to Exhibit 6 LORS Materials for a discussion of the applicability of the Transmission System-related LORS to the PEF Expansion project.

Appendix B (h) (4) A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.

Response: The proposed PEF Expansion uses the existing linear components of the existing PEF and therefore no new construction outside of the existing PEF plant site boundaries is anticipated. Confirmation on the preliminary and final interconnection approvals are expected from CA-ISO within the next 30 days.

PASTORIA ENERGY FACILITY 160 MW EXPANSION PROJECT
SUPPLEMENT TO APPLICATION FOR CERTIFICATION
Responses to CEC Staff Data Requests
Dated June 9, 2005
05-AFC-1

EXHIBIT 7
TRANSMISSION SYSTEM IMPACT STUDY EXECUTIVE SUMMARY DATED MAY 13, 2005

- Letter from Southern California Edison to Calpine dated June 8, 2005
- Executive Summary Transmission System Impact Study dated May 13, 2005

June 8, 2005

Mr. Ali Amirali
Director of Transmission Management
Calpine Corporation – Pastoria Energy Facility, LLC
4160 Dublin Boulevard
Dublin, CA 94568

**Subject: Pastoria Expansion Project
Interconnection System Impact Study Results**

Dear Mr. Amirali:

Attached is a System Impact Study (Study) related to your Transmission Owners (TO) Tariff request for interconnection of an additional 157 MW simple cycle gas turbine generator at the existing Pastoria Energy Facility located near Lebec, California. A copy of the Study was also transmitted to you, in part, via email on May 13, 2005.

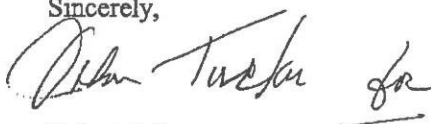
As identified in the Study, the existing transmission system is not adequate to accommodate the proposed 157 MW addition. A Facilities Study is necessary to determine the specific facilities, equipment modifications or additions that may be required as a result of the proposed generation increase and interconnection.

The Study results do not reflect any review or analysis by any third party. However, pursuant to Section 10.7 of the TO Tariff, a copy of this Study will be sent to the California Independent System Operator. If you elect to proceed with the interconnection process, copies may also be sent to the Western Electricity Coordinating Council and any transmission owner potentially impacted by the requested service. Review by these entities may necessitate modification to the Study. The cost of any Study revisions or mitigation requirements would be the responsibility of Calpine-Pastoria Energy Facility.

Within the next two weeks we intend to send you an executable Facilities Study Agreement. The Facilities Study Agreement will set forth the terms and conditions for SCE to perform the Facilities Study.

Please contact John Tucker at (626) 302-8623 if you have any questions regarding the Study or the forthcoming Facilities Study Agreement.

Sincerely,



Robert J. Lugo

Attachment

c: Paul N. Steckley (CAISO) w/Attachment
Mark Willis (CAISO) w/Attachment
Judy Nickel (CAISO) w/o Attachment

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PASTORIA ENERGY FACILITY, LLC
PASTORIA ADDITION

SYSTEM IMPACT STUDY

May 13, 2005



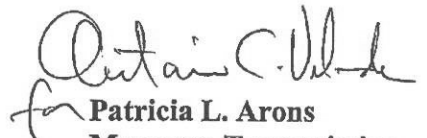
SOUTHERN CALIFORNIA
EDISON

An EDISON INTERNATIONALSM Company

Prepared by

Jorge Chacon

Southern California Edison Company


for Patricia L. Arons
Manager, Transmission
Interconnection Planning

EXECUTIVE SUMMARY

Pastoria Energy Facility (PEF) applied to the California Independent System Operator (CAISO) for Interconnection pursuant to Section 5.7 of the CAISO Tariff. Southern California Edison Company (SCE) performed a System Impact Study, as requested, for additional generation installation to the recently constructed Pastoria Energy Facility. The additional generation installation consists of a new gas fired generator with a net output of 157 MW (PEF Addition). The evaluations included study conditions with all generation projects in queue ahead of the Pastoria Addition.

The purpose of the System Impact Study is to determine the adequacy of SCE's transmission system to accommodate all or part of the requested capacity. This study identified that facility upgrades are necessary to mitigate thermal overload problems identified under base case, single outage, and double outage conditions. The results of the System Impact Study will be used to determine project cost allocation for facility upgrades. The study accuracy and the results from the assessment of the system adequacy are contingent on the accuracy of the technical data provided by the customer as shown in Figure 1 and Appendix H. Any changes to the attached data could invalidate the study results and may require reassessment.

The study includes power flow (steady-state and post-transient), transient stability and short-circuit duty analysis. The study was performed for two system conditions: (a) 2006 heavy summer load forecast (once-in-ten-year heat wave assumption) with very high internal northern area generation and high Midway-Vincent (Path 26) flow, and (b) 2007 spring load forecast (65% of 2006 heavy summer) with very high Big Creek Corridor generation and two Ventura area generation dispatch sensitivities in order to stress the Pardee and Antelope legs of the Big Creek Corridor. The following sections include discussion and study results of the System Impact Study for the PEF Addition.

LOAD FLOW RESULTS

The study identified base case overload problems on the Antelope-Mesa 230 kV T/L, Antelope-Cottonwind 230 kV T/L, and Pardee-Pastoria-Warne 230 kV T/L triggered by a project(s) in queue ahead of the PEF Addition. Under heavy summer conditions with the PEF Addition, loading on the Antelope-Mesa 230 kV T/L and Antelope-Cottonwind 230 kV T/L were found to be 115% and 102% respectively. Under light spring conditions with the PEF Addition, loading on the Antelope-Mesa 230 kV T/L, Antelope-Cottonwind 230 kV T/L, and Pardee-Pastoria-Warne 230 kV T/L were found to be 114%, 112% and 110% respectively.

In addition, the study identified a total of eight single contingencies under heavy summer conditions and nine single contingencies under light spring conditions which resulted in thermal overload problems on transmission facilities in the Big Creek Corridor south of the SCE Magunden 230 kV substation. Under heavy summer conditions with the PEF Addition, five different 230 kV transmission lines were found to be impacted with loadings ranging from 109% to 123%. Under light spring conditions with the PEF

Addition, eight different 230 kV transmission lines were found to be impacted with loadings ranging from 108% to 148%.

Lastly, the study identified a total of fourteen double contingencies under heavy summer conditions and thirteen double contingencies under light spring conditions which resulted in thermal overload problems on transmission facilities in the Big Creek Corridor south of the SCE Magunden 230 kV substation or case non-convergence. Under heavy summer conditions with the PEF Addition, ten different 230 kV transmission lines were found to be impacted with loadings ranging from 102% to 187%. Under light spring conditions with the PEF Addition, nine different 230 kV transmission lines were found to be impacted with loadings ranging from 106% to 230%.

TRANSIENT STABILITY RESULTS

Transient stability studies determined that the system remained stable under both single and double contingency outage conditions with the existing Big Creek and Pastoria Energy Facility Special Protection Schemes (SPS). As a result, the need for the PEF Addition to participate in an SPS requires the entire PEF Addition to be tripped to mitigate the incremental contribution to thermal overload problems identified in this study.

Transient stability studies did not identify a violation of the recently WECC approved Generator Electric Grid Fault Ride-Through Capability Criteria.

SHORT-CIRCUIT DUTY RESULTS

Breakers at the following seven locations should be evaluated by SCE T/S Engineering to determine need for breaker replacement: Lugo 500 kV, Mammoth 230 kV, Magunden 230 kV, Pardee 230 kV, Pastoria 230 kV, Sylmar 230 kV, and Vincent 230 kV.

SPECIAL PROTECTION SCHEME REQUIREMENT

Due to SPS design limitations, the potential for system instability and gross thermal overloads identified under loss of two transmission facilities (N-2) in the Big Creek Corridor south of the Magunden Substation are currently mitigated by tripping the entire 750 MW Pastoria Energy Facility regardless of flow levels. This could result in a maximum potential generation trip of approximately 1,150 MW which corresponds to the sum total of the 750 MW Pastoria Energy Facility and the corresponding Big Creek Hydro Generation trip. In addition, all projects in queue ahead of the PEF Addition who contribute to the identified thermal overloads will need to participate in an SPS to mitigate their corresponding incremental loading contributions. As a result, the total amount of generation tripping potential under double outage contingencies with the inclusion of all queued projects could potentially increase in excess of 2,300 MW.

With the addition of new transmission facilities south of Antelope, Phase 1 and Phase 2 of the Antelope Transmission Project, the total amount of generation tripping could be

reduced down to approximately 1,700 MW which is still in excess of the 1,400 MW CAISO Spinning Reserve limit. As such, SCE will require CAISO Operational approval to exceed the currently established 1,400 MW N-2 generation tripping limit if use of an SPS for the PEF Addition is to be considered. Arming studies necessary to support the SPS design and approval by the WECC RAS Task Force will determine the exact amount of generation tripping requirements once they are completed. However, due to design limitations, the PEF Addition may require complete redesign of the recently installed PEF SPS.

LIMITED OPERATION STUDIES

The proposed in-service date for the PEF Addition is earlier than a number of generation and transmission projects ahead in queue. Due to system limitations, the PEF Addition will not be allowed to generate prior to these upgrades being in service without additional studies. Operational studies will be necessary to identify if the PEF Addition can be placed in-service on a temporary basis, under limited condition (output and period), prior to constructing the currently planned transmission upgrades, except for the Pastoria-Pardee Reconductor Project, and any new transmission upgrades identified for this project during the Facilities Study. The operation of the PEF Addition prior to the in-service date of the transmission projects identified in the Facilities Study will be subject to CAISO approval.

FACILITY STUDY

A **Facilities Study** will be required to determine the facilities and upgrades necessary to interconnect the proposed PEF Addition. The study should:

1. Investigate feasibility and develop cost associated with upgrading the existing Pastoria-Pardee-Warne 230 kV T/L. Thermal base case overload on this transmission line was triggered by a project in queue ahead of the PEF Addition. Prior to the inclusion of the PEF Addition, the overload was found to be marginal and therefore upgrade was not recommended. The transmission upgrade that should be evaluated is the reconductoring with new ACSS/TW class conductor such as a 1334.6 ACSS/TW or other conductor with mechanical properties similar to the existing 1033 ACSR in order to avoid tear-down of existing tower infrastructure.
2. If reconductor with new ACSS/TW class conductor is not feasible, develop cost associated with the complete tear-down and rebuild of the Pastoria-Pardee-Warne 230 kV T/L with bundled 1590 ACSR conductor.
3. For loss of two transmission lines in the Big Creek Corridor south of Magunden, investigate with the CAISO the possibility of tripping generation in excess of the current 1,400 MW limit.

4. If the CAISO does not allow tripping in excess of the current 1,400 MW N-2 Spinning Reserve limit, investigate feasibility and develop costs associated with a new 230 kV T/L from Pastoria to Pardee.
5. Perform Technical Assessments with the following upgrades modeled in the case in order to determine if sufficient capacity is made available with the upgrades in place:
 - a. Upgrade to the existing Antelope-Mesa 230 kV T/L. This transmission upgrade was identified in a System Impact Study performed for a project in queue ahead of the PEF Addition. The project upgraded should involve complete tear-down and rebuild with
 - i. 500 kV single-circuit construction standards between the SCE Antelope and SCE Rio Hondo substations
 - ii. 230 kV double-circuit construction standards with a single bundled 1590 ACSR conductor between the SCE Rio Hondo and SCE Mesa 230 kV substations
 - b. Upgrade the existing section of the Antelope-Magunden No.2 230 kV T/L south of the newly proposed Cottonwind 230 kV substation. This transmission upgrade was identified in a System Impact Study performed for a project in queue ahead of the PEF Addition. The project upgraded should involve complete tear-down and rebuild with bundled 1590 ACSR conductor.
 - c. Upgrade to the existing Pardee-Pastoria-Warne 230 kV T/L with 1334.6 ACSS/TW.
 - d. Path 26 dispatch at 3,700 MW consistent with May 2, 2005 upgraded Path Rating.
6. If the initial technical studies determine that operating the new 500 kV facilities at 230 kV is insufficient, then perform additional studies to reevaluate system operating 500 kV facilities at 500 kV.
7. Determine if a Special Protection Scheme can be utilized to mitigate any remaining single and double contingency overloads.
 - a. If a special protection scheme is feasible, develop appropriate remedial action scheme, identify necessary protection requirements and develop cost.
 - b. If a special protection scheme is found to be infeasible, identify additional transmission upgrades necessary to mitigate any remaining impacts and develop cost.
8. Evaluate circuit breakers at the seven locations identified in Table 5 and develop costs for any breaker replacements as applicable.

9. Reevaluate single-phase-to-ground and three-phase-to-ground short-circuit duty including transmission upgrades listed in Item 5, review any additional substation locations, and develop cost.

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With Inclusion of the PEF Addition

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With Inclusion of the PEF Addition

APPENDIX H – Customer Provided Data

PASTORIA ENERGY FACILITY, LLC PASTORIA ADDITION SYSTEM IMPACT STUDY

May 13, 2005

I. INTRODUCTION

Pastoria Energy Facility (PEF) applied to the California Independent System Operator (CAISO) for Interconnection pursuant to Section 5.7 of the CAISO Tariff. Southern California Edison Company (SCE) performed a System Impact Study, as requested, for additional generation installation to the recently constructed Pastoria Energy Facility. The additional generation installation consists of a new gas fired generator with a total net output of 157 MW (PEF Addition). The evaluations included study conditions with all generation projects in queue ahead of the Pastoria Addition.

The purpose of the System Impact Study is to determine the adequacy of SCE's transmission system to accommodate all or part of the requested capacity. This study will identify the extent of any congestion and determine if there are any negative impacts to reliability. New special protection schemes (SPS), facilities, or system upgrades will be recommended to maintain system reliability in accordance with the California Independent System Operator's (CAISO) Reliability Criteria. The existing system cannot accommodate the PEF Addition without transmission upgrades.

The results of the System Impact Study will be used to determine project cost allocation for facility upgrades. The study accuracy and the results for the assessment of the system adequacy are contingent on the accuracy of the technical data provided by the customer as shown in Figure 1 and Appendix H. Any changes to the attached data could invalidate the study results and may require reassessment.

The study includes power flow (steady-state and post-transient), transient stability, and short-circuit duty analysis. The study was performed for two system conditions: (a) 2006 heavy summer load forecast (once-in-ten-year heat wave assumption) with very high internal northern area generation and high Midway-Vincent (Path 26) flow, and (b) 2007 spring load forecast (65% of 2006 heavy summer) with very high Big Creek Corridor generation and two Ventura area generation dispatch sensitivities in order to stress the Pardee and Antelope legs of the Big Creek Corridor. The following sections include discussion and study results of the System Impact Study for the PEF Project Addition.

II. STUDY CONDITIONS AND ASSUMPTIONS

A. Planning Criteria

The supplemental study was conducted by applying the California Independent System Operator (CAISO) Reliability Criteria. More specifically, the main criteria applicable to this study are as follows:

Power Flow Assessment

The following contingencies are considered for transmission and subtransmission lines and 500/230 kV transformer banks ("AA-Banks"):

Assuming the largest unit (San Onofre Unit 2 or 3) initially off and then:

- Single Contingencies (loss of one line or one AA-Bank)

Assuming both San Onofre Units in service and then:

- Single Contingencies (loss of one line or one AA-Bank)
- Double Contingencies (loss of two lines or one line and one AA-Bank)
(Outages of two AA-Banks are beyond the Planning Criteria)

The following loading criteria are used:

Transmission Lines	Base Case	Limiting Component Normal Rating
	N-1	Limiting Component A-Rating
	N-2	Limiting Component B-Rating
500/230 kV Transformer Banks	Base Case	Normal Loading Limit
	Long-Term & Short-Term	As defined by SCE Operating Bulletin No.33

The following principles were used in determining whether congestion management, special protection schemes, or facility upgrades are required to mitigate base case, single contingency, or double contingency overloads:

- Congestion management, as a means to mitigate base case overloads, can be used if it is determined to be manageable and the CAISO concurs with the implementation.
- Facility upgrades will be required if it is determined that the use of congestion management is unmanageable as defined in the congestion management section that follows.
- Special protection schemes (SPS), in lieu of facility upgrades, will be recommended if the scheme is effective, does not jeopardize system integrity, does not exceed the current CAISO single and double contingency tripping

limitations, does not adversely effect existing or proposed special protection schemes in the area, and can be readily implemented.

- Facility upgrades will be required if use of protection schemes is determined to be ineffective, the amount of tripping exceeds the current CAISO single and double contingency tripping limitations, adverse impacts are identified on existing or currently proposed special protection schemes, or the scheme cannot be readily implemented.
- Congestion management in preparation for the next contingency will be required, with CAISO concurrence, if no facility upgrades or special protection schemes are implemented.

Congestion Assessment

The following study method was implemented to assess the extent of possible congestion:

- a). Under Base Case with all transmission facilities in service, the system was evaluated with all existing interconnected generation and all generation requests in the area that have a queue position ahead of this request (pre-project).
- b). Under Base Case with all transmission facilities in service, the system was reevaluated with the inclusion of the PEF Addition (post-project).

If the normal loading limits of facilities are exceeded in (a), the overload is identified as an existing overload that was triggered by a project in queue ahead of the PEF Addition. If the normal loading limits of facilities are exceeded in (b) and were not exceeded in (a), the overload is identified as triggered by the addition of the PEF Addition. The PEF Addition and other market participants in the area may be subjected to congestion management, potential upgrade cost and/or participation of any proposed special protection scheme if the project addition aggravates or triggers the overload. Additionally, the PEF Addition may have to participate in mitigation of overloads triggered by subsequent projects in queue, subject to FERC protocols and policies.

In order for congestion management to be a feasible alternative to system facilities, all of the following factors need to be satisfied:

- Time requirements for necessary coordination and communication between the CAISO operators, scheduling operators and SCE operators.
- Distinct Path/Corridor rating should be well defined so monitoring and detecting congestion and implementing congestion of the contributing generation resources can be performed when limits are exceeded.

- Sufficient amount of market generation in either side of the congested path/corridor should be available to eliminate market power.
- Manageable generation in the affected area is necessary so that operators can implement congestion management if required (i.e. the dispatch schedule is known and controllable).

The results of these studies should be able to identify:

- a). if capacity is available to accommodate the proposed PEF Addition and all projects ahead in queue without the need for congestion management, special protection schemes, or facility upgrades
- b). if congestion still exists in the area with the inclusion of the PEF Addition and all projects ahead in queue under single and double element outage conditions assuming no new special protection schemes are in place
- c). if sufficient capacity is maintained to accommodate all Must-Run and Regulatory Must-Take generation resources with all facilities in service
- d). if sufficient capacity is maintained to accommodate the total output of any one generation resource which is not classified as Must-Run.

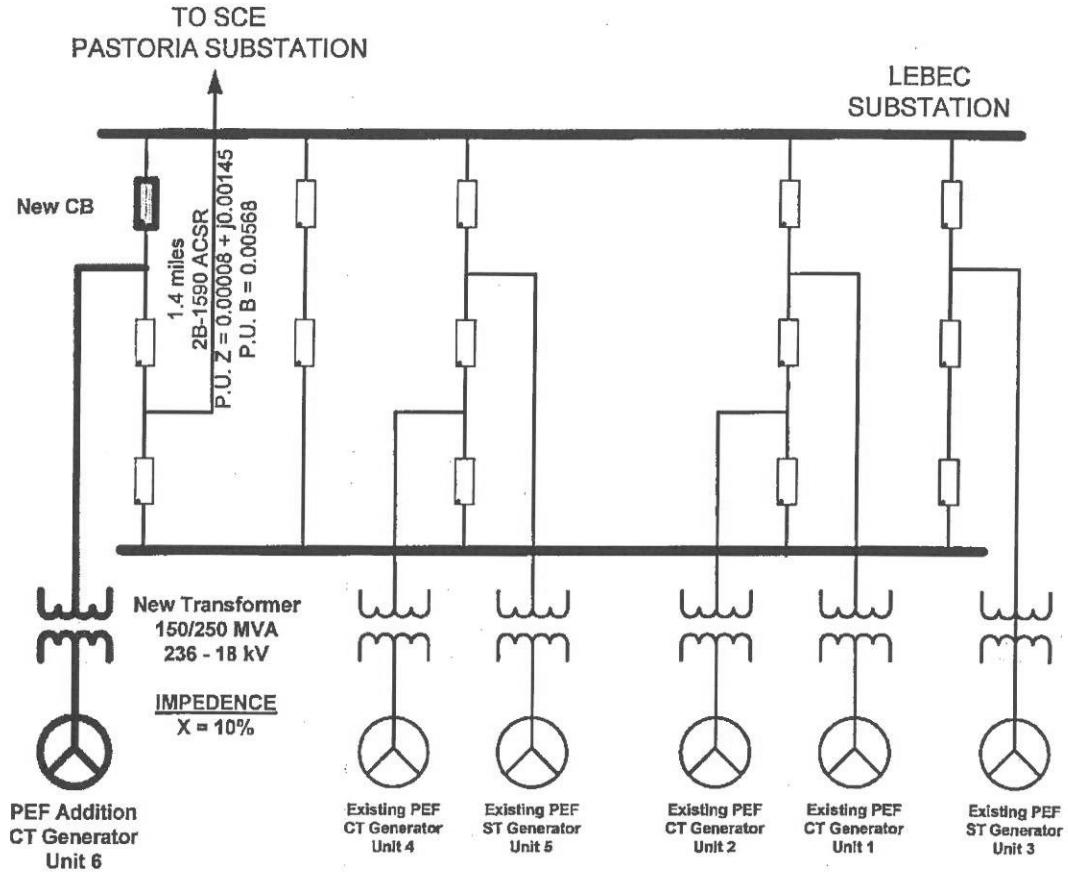
The range of base case congestion will be determined by reducing market generation projects in the various areas within the SCE northern system (i.e. Big Creek corridor, Ventura Area, Path 26, etc.). For single and double element outage conditions, the same methodology will be used to determine how much generation tripping is required in order to determine if use of special protection schemes is appropriate. Use of special protection schemes will be deemed inappropriate if the total amount of generation reduction is found to exceed 1,150 MW under loss of one transmission element and 1,400 MW under loss of two transmission elements. These limits are established by the CAISO utilizing the current Spinning Reserve Criteria.

B. Pastoria Energy Facility Addition

The Pastoria Energy Facility is geographically located east of Interstate 5 north of Lebec, California. The Project Addition is to be connected to the recently constructed Lebec 230 kV Substation. Figure 1 below provides the single line diagram showing the proposed PEF Addition.

The inclusion of the PEF Addition is anticipated to impact flows on the Big Creek Corridor transmission lines south of Magunden. There are currently eleven 230 kV transmission lines south of Magunden that will increase to twelve with the addition of another project in queue ahead of the PEF Addition. Existing amp ratings for these transmission lines are provided below in Table 1.

**FIGURE 1
PASTORIA ENERGY FACILITY ADDITION**



**TABLE 1
SOUTH OF MAGUNDEN TRANSMISSION LINE AMPACITY VALUES**

Transmission Line	Normal	Long-Term Emergency	Short-Term Emergency
Antelope Magunden No.1 230 kV	895	945	945
Antelope-Mesa 230 kV	895	1020	1190
Antelope-Vincent 230 kV	1240	1342	1342
Antelope-Cottonwind 230 kV	1240	1320	1342
Cottonwind-Magunden 230 kV	1240	1342	1342
Magunden-Pastoria No.1 230 kV	825	936	936
Magunden-Pastoria No.2 230 kV	825	936	936
Magunden-Pastoria No.3 230 kV	1150	1320	1342
Bailey-Pardee 230 kV	1500	1500	1500
Pardee-Pastoria 230 kV	1500	1500	1500
Pardee-Pastoria-Warne 230 kV	1240	1342	1342
Pardee-Pastoria-Warne 230 kV	1240	1342	1342
Bailey-Pastoria 230 kV	1500	1500	1500

C. Currently Planned Transmission Projects

Wind generation interconnection requests in the Antelope Valley and Tehachapi Area ahead of the PEF Addition have triggered the need for additional transmission projects or upgrades in the Big Creek Corridor. These upgrades include the new transmission facilities from the SCE Antelope Substation to the SCE Pardee and SCE Vincent substations as outlined below. An application for a Certificate of Public Convenience and Necessity (CPCN) has been filed for these upgrades by SCE with the California Public Utilities Commission (CPUC). The following transmission facilities for which a CPCN application was filed were modeled into the starting power flow cases:

- Segment 1 of the Antelope Transmission Project - a new 500 kV transmission line (bundled 2156 ACSR) initially energized at 230 kV from the Antelope substation to Pardee substation (approved by the CAISO)
- Segment 2 of the Antelope Transmission Project - a new 500 kV transmission line (bundled 2156 ACSR) initially energized at 230 kV from the Antelope substation to Vincent substation (not yet approved by the CAISO)
- Segment 3 of the Antelope Transmission Project (not yet approved by the CAISO):
 - a new radial 500 kV transmission line (bundled 2156 ACSR) initially energized at 230 kV from the Antelope substation to the potential location of a conceptual substation hub referred to as Tehachapi Substation #1 near Cal Cement
 - a new 230 kV transmission line (bundled 1590 ACSR) from the location of the Tehachapi Substation #1 to the location of a second conceptual substation referred to as Tehachapi Substation #2 near Monolith
 - a new substation near Monolith with two line positions (one for line to Antelope and one for line to the Barren Ridge I Wind Project which then continues to the Barren Ridge II Wind Project) referred to as Tehachapi Substation #2.

In addition to the above transmission projects, the Pastoria-Pardee Reconductor Project was also included into the starting power flow cases. This project was identified as an infrastructure replacement project and consists of reconductoring two of the three lines south of Pastoria (Pastoria-Bailey, Bailey-Pardee and Pastoria-Pardee 230 kV 605 ACSR conductored transmission lines) with a new 666.6 ACSS/TW conductor. The new conductor will increase the thermal conductor rating of these two lines from 885 amps up to 1500 amps. The third transmission line south of Pastoria (Pastoria-Pardee-Warne 230 kV) is not part of this project and therefore will be limited to a maximum conductor rating of 1240 amps based on conductor

type. This project is currently under construction with the Pastoria-Bailey 230 kV line already upgraded. Upgrades to the remaining lines will be done commencing on October 2005 and be completed by April 2006.

Need for additional transmission upgrades have been identified in System Impact Studies performed for projects ahead in queue of the PEF Addition. These upgrades are currently being explored as part of the corresponding Facilities Study and may provide additional capacity for the PEF Addition. These potential upgrades include complete tear-down and rebuild of the existing Antelope-Mesa 230 kV transmission line. Neither a CPCN application has not been filed with the CPUC for this transmission upgrade nor has the CAISO granted approval for such an upgrades. As such, these projects were not included into the starting base cases.

D. System Conditions

To simulate the SCE transmission system for analysis, the study used databases that were used to conduct the SCE Annual CAISO Controlled Facilities Expansion Program. The bulk power study considered scenarios that evaluated maximum Midway-Vincent¹ imports² and maximum generation from the Big Creek hydro units, Qualified Facilities, and market generation in the Big Creek and Ventura areas. Pump loads were assumed off for both the heavy summer and light spring conditions. These conditions were examined to identify loading scenarios that would stress the SCE 500 kV transmission system network and the 230 kV Big Creek corridor. In addition, the study considered three load conditions: 2006 heavy summer, 2007 light spring stressing the Pardee leg of the Big Creek corridor, and 2007 light spring stressing the Antelope leg of the Big Creek Corridor.

E. Big Creek Remedial Action Scheme

The Big Creek system has several existing remedial action schemes (RAS) for single and double element outage conditions. The relevant elements of the existing Big Creek RAS that may be impacted by the proposed PEF Addition are as follows:

1. An overload of the following lines will initiate an automatic runback of the generation units at Mammoth Pool and/or Eastwood. Eastwood will not runback if in pump mode.
 - Magunden-Pastoria No.1 230-kV
 - Magunden-Pastoria No.2 230-kV
 - Magunden-Pastoria No.3 230-kV

¹ Midway-Vincent lines interconnect Northern California with Southern California and are referred to as Path 26. Maximizing Midway-Vincent flow increases imports through the SCE 500 kV network.

² Imports were set to 3,400 MW in accordance with the existing WECC Path Rating at time of application. It should be noted that Path rating studies are currently underway to evaluate further increasing path rating to 3,700 and 4,000 MWs.

2. An SEL-68 stability relay located at Magunden will run-back the generation units at Mammoth Pool and/or Eastwood for growing oscillations and trip for unstable power swings. Eastwood will not be tripped if in pump mode.
3. At any time that the Big Creek and San Joaquin Valley RAS is inoperative or if the SEL-68 stability trip relay at Magunden is unavailable, the following limitation will apply:
 - Big Creek Project (Big Creek 1, 2, 3, 4, 8, Mammoth Pool, Portal PH, and Eastwood) net generation output is limited as defined by System Operating Bulletin No.204.
 - The power flow south of the SCE Magunden substation is limited to 1180 MW with all five lines in service.

F. New PEF Special Protection Schemes

The initial Pastoria Energy Facility 750 MW project required a new Special Protection Scheme (PEF SPS) for loss of one or two transmission facilities. This new SPS has been approved by the WECC RAS Task Force and has already been placed in service. The following outlines the outages that can result in the potential operation of the new PEF SPS:

Single Outages

1. Loss of Antelope-Magunden No.1 230 kV
2. Loss of Antelope-Magunden No.2 230 kV
3. Loss of Pastoria-Edmonston 230 kV
4. Loss of Pastoria-Pardee 230 kV
5. Loss of Pastoria-Pardee-Warne 230 kV
6. Loss of Pardee-Bailey 230 kV
7. Loss of Pastoria-Bailey 230 kV

Double Outages

1. Loss of Antelope-Magunden No.1 and No.2 230 kV lines
2. Loss of Antelope-Vincent and Antelope-Mesa 230 kV lines
3. Loss of Pastoria-Pardee-Warne and Pastoria-Pardee 230 kV lines
4. Loss of Pastoria-Pardee-Warne and Pastoria-Bailey 230 kV lines
5. Loss of Pastoria-Pardee-Warne and Pardee-Bailey 230 kV lines
6. Loss of Pastoria-Pardee and Pastoria-Bailey 230 kV lines
7. Loss of Pastoria-Pardee and Pardee-Bailey 230 kV lines

Maintenance Outages

Under maintenance conditions, the proposed PEF SPS will arm the entire Pastoria Energy Facility (750 MW) to trip for the next outage condition.

The PEF SPS design is by far the most complicated Special Protection Scheme in service to protect the SCE network. The scheme has a total of 28 arming points, which is the current maximum number of arming points that SCE will consider in implementing an SPS. Twenty-seven of the twenty-eight arming points are utilized to trip individual units at the Pastoria Energy Facility (five units) under the outages outlined above. The design of the scheme groups the seven single outages into five arming categories in order to limit the number of arming points required for single outages to twenty-five (5 arming buckets x 5 units = 25) in a fashion that provides the most flexibility. For loss of two transmission lines, the entire PEF project is tripped thereby requiring only one arming point. An additional arming point is utilized to handle maintenance outages and overlapping outages.

Generation projects in queue ahead of the PEF addition were identified to potentially require implementation of special protection schemes. Since the PEF SPS cannot be expanded beyond the current design, complete redesigned of the RAS may be necessary. Such redesign may involve tripping the proposed project addition for each of the outages previously identified. New facility upgrades will be required if it is determined that use of SPS cannot be implemented for the PEF addition. Results of the study will be used to determine if redesigned of the PEF RAS may be used to accommodate the additional generation unit.

G. Power Flow Study

The system impact studies evaluated a total of six different power flow study scenarios. Transmission projects were included in order to identify if the need for additional delivery upgrades are necessary. Further description of the additional case assumptions follows:

1. Big Creek Corridor under 2006 heavy summer with all currently planned transmission upgrades and generation projects in queue ahead of the PEF Addition, Case 1.

Upgraded Big Creek Corridor to include all transmission projects and a 2006 heavy summer load forecast with high internal generation in the SCE northern area electrical system. Generation included: Year 2004 reliability must-run, regulatory must-take, all existing generation in the basin area, and all other proposed generation projects in queue ahead of the proposed Pastoria Addition. Generation patterns were maximized in the SCE northern area, with the South of Lugo limit enforced, in order to identify extent of potential congestion after the in-service of the proposed project

2. Big Creek Corridor under 2006 heavy summer with all currently planned transmission upgrades and the inclusion of the PEF Addition, Case 2.

Case 1 was modified to include the PEF Addition. South of Lugo flow was not enforced in order to determine project contribution to the South of Lugo loading problem.

3. Big Creek Corridor under 2007 light spring with all currently planned transmission upgrades and generation projects in queue ahead of the PEF Addition while stressing the Pardee leg of the Big Creek corridor, Case 3

Upgraded Big Creek Corridor to include all transmission projects and a 2007 light spring load forecast with high internal generation in the SCE northern area electrical system. Generation included: Year 2004 reliability must-run, regulatory must-take, all existing generation in the basin area, and all other proposed generation projects in queue ahead of the proposed PEF Addition. Generation patterns were maximized in the SCE northern area, except for Ventura Area generation which was assumed off-line, in order to identify the extent of potential congestion after the in-service of the proposed project when stressing the Pardee leg of the Big Creek corridor.

4. Big Creek Corridor under 2007 light spring with all currently planned transmission upgrades and the inclusion of the PEF Addition while stressing the Pardee leg of the Big Creek Corridor, Case 4

Case 3 was modified to include the PEF Addition.

5. Big Creek Corridor under 2007 light spring with all currently planned transmission upgrades and generation projects in queue ahead of the PEF Addition while stressing the Antelope leg of the Big Creek corridor, Case 5.

Case 3 was modified to adjust interchanges between Arizona and California so that Ventura area generation can be dispatched to reflect 35% of total nameplate capacity available in order to stress the Antelope leg of the Big Creek corridor.

6. Big Creek Corridor under 2007 light spring with all currently planned transmission and the inclusion of the PEF Addition while stressing the Antelope leg of the Big Creek Corridor, Case 6

Case 5 was modified to include the PEF Addition.

TABLE 2
POWER FLOW STUDY ASSUMPTIONS (MW)

Area Assumptions	Heavy Summer		Light Spring Stress Pardee		Light Spring Stress Antelope	
	Case 1 Pre	Case 2 Post	Case 3 Pre	Case 4 Post	Case 5 Pre	Case 6 Post
Generation	15,679	15,702	7,299	7,322	8,106	8,128
Import	7,462	7,462	6,828	6,827	6,027	6,028
Load	22,553	22,553	13,625	13,625	13,625	13,625
System Losses	588	611	502	524	508	531
Major Flows						
Path 26	3,390	3,388	3,391	3,389	3,371	3,367
East-of-River	3,121	3,121	2,287	2,483	1,785	1,782
West-of-River	3,940	3,944	3,737	3,735	3,069	3,067
South of Magunden	716	716	1,077	1,077	1,077	1,077
North of Lugo	967	967	28	27	26	26
South of Lugo	5,799	5,853	4,542	4,597	4,574	4,630
South of Pardee & Vincent	3,400	3,509	3,007	3,119	3,468	3,579
SCIT	12,787	12,785	10,187	10,181	9,498	9,495

H. Transient Stability Study

The following study conditions were utilized in conducting the transient stability assessment:

- An SEL-68 stability relay located at Magunden that is part of the Big Creek Remedial Action Scheme (RAS) could result in either run back or tripping of the Big Creek hydro generation depending on stable or unstable power swings, which occur under extremely high south of Magunden flows. To examine potential impacts to the existing Special Protection Schemes, all single contingency conditions were evaluated with south of Magunden power flows adjusted prior to adding the PEF Addition so that loss of any one line did not trigger the Big Creek RAS.
- For double contingency conditions, south of Magunden power flows were maximized to determine if additional wind generation adversely aggravates the existing special protection schemes (SPS) in the Big Creek Corridor and triggers need to include additional generation units into the existing Special Protection Schemes.
- Standard fault clearing times were applied for single outage contingencies assuming three-phase-to-ground faulted conditions. These times include 6-cycle fault clearing for 230 kV faults in the Big Creek corridor, 5-cycle fault clearing for 230 kV faults in the main LA Basin (south of the Vincent and Pardee substations), and 4-cycle fault clearing for 500 kV faults.

- Standard fault clearing times were applied for double outage contingencies assuming single-phase-to-ground faulted conditions.
- Delayed fault clearing times were applied for single contingencies assuming single-line-to-ground faulted conditions.

I. Short -Circuit Duty

To determine the impact on short-circuit duty after inclusion of the PEF Addition, the study calculated the maximum symmetrical three-phase-to-ground short-circuit duties at the most critical locations. Bus locations where short-circuit duty is increased with the PEF Addition by at least 0.1 KA and the duty is in excess of 60% of the minimum breaker nameplate rating are flagged for further review in the Facilities Study. Generator and transformer data as provided by the customer was used according to the generator and transformer data sheets.

III. GENERATOR ELECTRIC GRID FAULT RIDE-THROUGH CAPABILITY CRITERIA

WECC has recently adopted a Generator Electrical Grid Fault Ride-Through Capability Criteria. The purpose of this Low Voltage Ride-Through Criteria is to ensure continued reliable service. The Criteria is summarized as follows:

1. Generators are required to remain in-service during system faults (three phase faults with normal clearing and single-line-to-ground with delayed clearing) unless clearing the fault effectively disconnects the generator from the system. This requirement does not apply to faults that would occur between the generator terminals and the high side of the generator step-up transformer or to faults that would result in a voltage lower than 0.15 per unit as measured on the high side of the generator step up transformer.
2. In the post-fault transient period, generators are required to remain in-service for the low voltage excursions specified in WECC Table W-1 (provided below) as applied to load bus constraint. These performance criteria are applied to the generator interconnection point, not the generator terminals.
3. Generators may be tripped after the fault period if this action is intended as part of a special protection scheme.
4. This Standard does not apply to a site where the sum of the installed capabilities of all machines is less than 10MVA, unless it can be proven that reliability concerns exist.
5. This Standard applies to any generation independent of the interconnected voltage level.

6. This standard can be met by the performance of the generators or by installing additional equipment (e.g. SVC, etc.).
7. Existing individual generator units that are, or have been, interconnected to the network at the same location at the time of the adoption of this Standard are exempt from meeting this Standard for the remaining life of the existing generation equipment. Existing individual generator units that are replaced are required to meet this Standard.

Table W-1
WECC DISTURBANCE-PERFORMANCE TABLE
OF ALLOWABLE EFFECTS ON OTHER SYSTEMS

NERC and WECC Categories	Outage Frequency Associated with the Performance Category (Outage/Year)	Transient Voltage Dip Standard	Minimum Transient Frequency Standard	Post-Transient Voltage Deviation Standard (See Note 2)
A	Not Applicable	Nothing in Addition to NERC		
B	≥ 0.33	Not to exceed 25% at load buses or 30% at non-load buses. Not to exceed 20% for more than 20 cycles at load buses.	Not below 59.6 Hz for 6 cycles or more at a load bus	Not to exceed 5% at any bus
C	0.033 – 0.33	Not to exceed 30% at any bus. Not to exceed 20% for more than 40 cycles at load buses.	Not below 59.0 Hz for 6 cycles or more at a load bus	Not to exceed 10% at any bus
D	< 0.033	Nothing in Addition to NERC		

Note 2: As an example in applying the WECC Disturbance-Performance Table, Category B disturbance in one system shall not cause a transient voltage dip in another system that is greater than 20% for more than 20 cycles at load buses, or exceed 25% at load buses or 30% at non-load buses at any time other than during the fault.

IV. DYNAMIC MODELS

GE PSLF Version 14.2, adopted by WECC, supports the generation models proposed by for the PEF Addition.

genrou

This model is used for a solid rotor generator that is represented by equal mutual inductance rotor modeling.

ggovl

This model is used to represent a general governor model that is proposed to be used with this generator.

exst4b

This model is used to represent an IEEE type ST4b excitation system proposed to be used with this generator.

pss2a

This model is used to represent a dual input power system stabilizer (IEEE type PSS2A) proposed to be used with this generator.

V. POWER FLOW RESULTS

The need for additional transmission line upgrades south of Antelope was identified with the addition of previous generation projects in queue ahead of the PEF Addition. SCE was ordered to file an application for a Certificate for Public Convenience and Necessity (CPCN) with the California Public Utility Commission (CPUC) for transmission facilities necessary to integrate wind generation pursuing interconnection via the FERC mandated CAISO Interconnection process as well as other conceptual wind generation projects located in the Antelope Valley and Tehachapi Region³. As a result, these studies were performed with the assumption that transmission upgrades south of Antelope as discussed in the Assumptions Section were in service prior to inclusion of the PEF Addition. These upgrades are part of the Antelope Transmission Project (ATP) and involve new transmission from the Antelope Substation to the Pardee Substation located in Santa Clarita, from Antelope to Vincent. The Antelope, Pardee, and Vincent Substations are located in the Lancaster area, Santa Clarita, and Acton area respectively.

The following presents the power flow study results. Power flow plots are provided in Appendix A (Heavy Summer), Appendix B (Light Spring w/o Ventura area generation) and Appendix C (Light Spring with 35% Ventura area generation). Details of heavy summer results are provided in Table 7-1 while Light Spring results stressing the Antelope and Pardee Legs of the Big Creek Corridor are provided in Table 7-2 and Table 7-3 respectively.

BASE CASE

With the addition of generation at the existing Pastoria Energy Facility, the study identified two transmission lines with base case overloads during summer conditions and three transmission lines with base case overloads during spring conditions. These overloads are summarized below in Table 3-1.

³ CPUC Decision 04-06-010

Table 3-1
Base Case Thermal Overloads

Impacted Transmission Lines	Heavy Summer		Light Spring	
	Pre	Post	Pre	Post
Antelope-Cottonwind 230 kV	97.0%	101.7%	107.4%	112.0%
Antelope-Mesa 230 kV	112.5%	114.7%	111.0%	114.3%
Pardee Leg of Pardee-Pastoria-Warne 230 kV	-	-	101.2%	109.7%

It should be noted that the Pardee-Pastoria-Warne 230 kV T/L is not part of the Pastoria-Pardee Reconductor Project and therefore will require mitigation of identified overload problem. In addition, this line is limited due to line clearance so congestion management protocols need to be established such that the loading can be decreased in a short period.

SINGLE OUTAGE CONTINGENCY (N-1)

Under heavy summer conditions, eight single contingencies were identified to result in line loadings that are in excess of the maximum allowable limit on five different transmission lines. Two of the five impacted transmission lines were also identified to experience base case condition thermal loadings in excess of maximum allowable limit. Two of the three single contingency outage impacted transmission lines that are not identified to be a base case overload are triggered by a project in queue ahead of the PEF Addition but are aggravated with the PEF Addition. The remaining transmission line overload identified under heavy summer load conditions is triggered with the PEF Addition. Highest loading on impacted transmission line is summarized below in Table 3-2 with a more detailed summary provided in Table 7-1 located in the Table Section.

Table 3-2
Heavy Summer Thermal Overloads
Under Loss of One Transmission Facility

Impacted Transmission Line	Worst Single Contingency	Pre	Post
Antelope-Cottonwind 230 kV	Antelope-Magunden 230 kV T/L	114.3%	120.4%
Antelope-Magunden 230 kV	Antelope-Cottonwind 230 kV T/L	114.9%	122.6%
Antelope-Mesa 230 kV	Mesa-Vincent 230 kV T/L	130.4%	134.3%
Antelope-Vincent 230 kV (Existing)	New Antelope-Vincent 230 kV T/L	102.3%	108.9%
Pardee-Pastoria-Warne 230 kV	Bailey-Pastoria 230 kV T/L	110.5%	122.0%

Under light spring conditions, a total of nine single contingencies were identified to impact eight transmission lines. Three of these eight impacted transmission lines were also identified as base case overload problems. Overloads on the remaining five impacted transmission lines were found to be triggered by a project in queue ahead of the PEF Addition and are aggravated with the inclusion of the PEF Addition. Of these five transmission lines, two involve overloads on south of Pastoria transmission facilities that are currently being upgraded from 605 ACSR conductor (885 amps) to 666.6 ACSS/TW conductor (1500 amps). The 666.6 ACSS/TW conductor transmission lines do not have

emergency capability due to conductor limitations (normal rating is equal to emergency rating). Since the inclusion of the PEF Addition adversely increases the tripping potential for the 750 MW Pastoria Energy Facility, the PEF Addition will be required to mitigate such incremental impact by either adding new facilities or participating in a new Special Protection Scheme (SPS) that trips the PEF Addition if use of such SPS is found to be acceptable.

Highest loading on impacted transmission line is summarized below in Table 3-3 with a more detailed presentation provided in Table 7-2 and Table 7-3 located in the Table Section

Table 3-3
Light Spring Thermal Overloads
Under Loss of One Transmission Facility

Impacted Transmission Line	Worst Single Contingency	Pre	Post
Antelope-Cottonwind 230 kV	Pardee-Pastoria 230 kV T/L	120.6%	138.1%
Antelope-Magunden 230 kV	Antelope-Cottonwind 230 kV T/L	133.7%	141.4%
Antelope-Mesa 230 kV	Mesa-Vincent 230 kV T/L	127.0%	130.5%
Antelope-Vincent 230 kV (Existing)	New Antelope-Vincent 230 kV T/L	120.6%	126.8%
Bailey-Pardee 230 kV	Pardee-Pastoria 230 kV T/L	99.2%	107.9%
Bailey-Pastoria 230 kV	Pardee-Pastoria 230 kV T/L	106.7%	116.1%
Pardee-Pastoria 230 kV	Bailey-Pastoria 230 kV T/L	102.4%	111.8%
Pardee-Pastoria-Warne 230 kV	Bailey-Pastoria 230 kV T/L	136.4%	148.2%

DOUBLE OUTAGE CONTINGENCY (N-2)

The studies identified a total of fourteen "likely" double contingencies impacting ten different 230 kV transmission lines. All impacted ten different transmission lines were found to be impacted by projects in queue ahead of the PEF Addition. The inclusion of the PEF Addition aggravates these overloads and therefore will be required to participate in mitigation measures. Most incremental impacts are in the order of 10 to 20 percent. In addition, several double outage contingencies did not result in a converging solution indicating a potential voltage collapse. The use of a special protection scheme will only be considered if the CAISO concurs that the current 1,400 MW N-2 maximum generation trip limit can be exceeded. The details of these double outage contingencies are provided in Table 7-1, Table 7-2, and Table 7-3.

VI. TRANSIENT STABILITY STUDY RESULTS

Single Contingencies (N-1)

As discussed in the assumptions section, all single contingency transient stability studies were conducted by applying a three-phase-to-ground bus fault at critical locations. These locations involved substations in the Big Creek corridor between Magunden, Pardee, and Vincent. Results of the transient stability analysis indicate that the system remains stable

under loss of one transmission line and operation of any corresponding special protection schemes. Single contingency transient stability plots prior to including the PEF Addition and after including the PEF Addition are provided in Appendix D and Appendix E respectively. Table 4 below summarizes the critical outages examined and provides study results.

Table 4-1
Single Contingency
Transient Stability Study Results

Type of Outage	Fault Type	Fault Duration	Transmission Line Outage	Stability Results
Single	3Ø	6 cycles	Antelope-Magunden No.1 230 kV	Stable
Single	3Ø	6 cycles	Antelope-Mesa 230 kV	Stable
Single	3Ø	6 cycles	New Antelope-Pardee 230 kV	Stable
Single	3Ø	6 cycles	New Antelope-Vincent 230 kV	Stable
Single	3Ø	6 cycles	Proposed Antelope-Cottonwind 230 kV	Stable
Single	3Ø	6 cycles	Bailey-Pastoria 230 kV	Stable
Single	3Ø	6 cycles	Magunden-Pastoria No.3 230 kV	Stable
Single	3Ø	6 cycles	Proposed Magunden-Cottonwind 230 kV	Stable
Single	3Ø	6 cycles	Pardee-Bailey 230 kV	Stable
Single	3Ø	6 cycles	Pardee-Pastoria 230 kV	Stable
Single	3Ø	6 cycles	Pastoria-Pardee-Warne 230 kV	Stable

Double Contingencies (N-2)

As discussed in the assumptions section, all double contingency studies were conducted by applying a single-phase-to-ground bus fault at critical locations. These locations involved substations in the Big Creek corridor between Magunden, Pardee, and Vincent. Results of the double contingency transient stability analysis indicate that the inclusion of the PEF Addition does not adversely impact system stability. All identified transient stability problems are mitigated by either existing special protection schemes (Big Creek RAS and PEF SPS) or by previously identified need for additional SPS triggered by a project in queue ahead of the PEF Addition. As a result, the need for tripping the PEF Addition is dictated by the incremental thermal loading contribution associated with the PEF Addition. Double contingency transient stability plots prior to the PEF Addition and after including the PEF Addition are provided in Appendix F and Appendix G respectively. Table 4-2 below summarizes the critical outages examined and provides study results.

Table 4-2
Double Contingency
Transient Stability Study Results

Type of Outage	Fault Type	Fault Duration	Transmission Line Outage	Stability Results
Double	1Ø	6 cycles	Antelope-Magunden No.1 230 kV Proposed Antelope-Cottonwind 230 kV	Stable
Double	1Ø	6 cycles	Antelope-Mesa 230 kV Antelope-Vincent 230 kV	Stable
Double	1Ø	6 cycles	New Antelope-Vincent 230 kV Antelope-Vincent 230 kV	Stable
Double	1Ø	6 cycles	Antelope-Magunden No.1 230 kV Proposed Magunden-Cottonwind 230 kV	Stable
Double	1Ø	6 cycles	Magunden-Pastoria No.2 230 kV Magunden-Pastoria No.3 230 kV	Stable
Double	1Ø	6 cycles	Bailey-Pastoria 230 kV Pardee-Pastoria 230 kV	Stable
Double	1Ø	6 cycles	Pardee-Pastoria 230 kV Pardee-Pastoria-Warne 230 kV	Stable
Double	1Ø	6 cycles	Pardee-Bailey 230 kV Pardee-Pastoria 230 kV	Stable
Double	1Ø	6 cycles	Pardee-Bailey 230 kV Pardee-Pastoria-Warne 230 kV	Stable

VII. SHORT CIRCUIT DUTY STUDY RESULTS

The results of the maximum symmetrical three-phase-to-ground short circuit duty at the critical buses in the SCE bulk transmission system are summarized below in Table 6. The study results indicate that the PEF Addition increases short-circuit duties by an amount equal or greater than 0.1kA at seven locations where duty is in excess of 60% of the minimum breaker nameplate rating. The following summarizes the impact of the PEF addition:

- At Pastoria 230kV substation bus, the short-circuit duty is increased by 1.8kA from 31.4 to 33.2kA
- Breakers at the seven locations listed below in Table 5 should be evaluated by SCE T/S Engineering to determine need for breaker replacement.

Table 5
Three-Phase-to-Ground Short-Circuit Duty Results

Substation	Bus KV	Pre-Project		Post-Project		DELTA KA
		X/R	KA	X/R	KA	
Pastoria	230	14.1	31.4	14.8	33.2	1.8
Magunden	230	10	21.2	10	21.5	0.3
Pardee	230	17.3	54.5	17.2	54.7	0.2
Lugo	500	21.7	43.7	21.7	43.8	0.1
Mammoth	230	10.5	7.6	10.5	7.7	0.1
Sylmar S.	230	19.5	57.7	19.4	57.8	0.1
Vincent	230	19.5	54	19.5	54.1	0.1

VIII. CONCLUSION

LOAD FLOW RESULTS

The study identified base case overload problems on the Antelope-Mesa 230 kV T/L, Antelope-Cottonwind 230 kV T/L, and Pardee-Pastoria-Warne 230 kV T/L triggered by a project(s) in queue ahead of the PEF Addition. Under heavy summer conditions with the PEF Addition, loading on the Antelope-Mesa 230 kV T/L and Antelope-Cottonwind 230 kV T/L were found to be 115% and 102% respectively. Under light spring conditions with the PEF Addition, loading on the Antelope-Mesa 230 kV T/L, Antelope-Cottonwind 230 kV T/L, and Pardee-Pastoria-Warne 230 kV T/L were found to be 114%, 112% and 110% respectively.

In addition, the study identified a total of eight single contingencies under heavy summer conditions and nine single contingencies under light spring conditions which resulted in thermal overload problems on transmission facilities in the Big Creek Corridor south of the SCE Magunden 230 kV substation. Under heavy summer conditions with the PEF Addition, five different 230 kV transmission lines were found to be impacted with loadings ranging from 109% to 123%. Under light spring conditions with the PEF Addition, eight different 230 kV transmission lines were found to be impacted with loadings ranging from 108% to 148%.

Lastly, the study identified a total of fourteen double contingencies under heavy summer conditions and thirteen double contingencies under light spring conditions which resulted in thermal overload problems on transmission facilities in the Big Creek Corridor south of the SCE Magunden 230 kV substation or case non-convergence. Under heavy summer conditions with the PEF Addition, ten different 230 kV transmission lines were found to be impacted with loadings ranging from 102% to 187%. Under light spring conditions with the PEF Addition, nine different 230 kV transmission lines were found to be impacted with loadings ranging from 106% to 230%.

TRANSIENT STABILITY RESULTS

Transient stability studies determined that the system remained stable under both single and double contingency outage conditions with the existing Big Creek and Pastoria Energy Facility Special Protection Schemes (SPS). As a result, the need for the PEF Addition to participate in an SPS requires the entire PEF Addition to be tripped to mitigate the incremental contribution to thermal overload problems identified in this study.

Transient stability studies did not identify a violation of the recently WECC approved Generator Electric Grid Fault Ride-Through Capability Criteria.

SHORT-CIRCUIT DUTY RESULTS

Breakers at the following seven locations should be evaluated by SCE T/S Engineering to determine need for breaker replacement: Lugo 500 kV, Mammoth 230 kV, Magunden 230 kV, Pardee 230 kV, Pastoria 230 kV, Sylmar 230 kV, and Vincent 230 kV.

SPECIAL PROTECTION SCHEME REQUIREMENT

Due to SPS design limitations, the potential for system instability and gross thermal overloads identified under loss of two transmission facilities (N-2) in the Big Creek Corridor south of the Magunden Substation are currently mitigated by tripping the entire 750 MW Pastoria Energy Facility regardless of flow levels. This could result in a maximum potential generation trip of approximately 1,150 MW which corresponds to the sum total of the 750 MW Pastoria Energy Facility and the corresponding Big Creek Hydro Generation trip. In addition, all projects in queue ahead of the PEF Addition who contribute to the identified thermal overloads will need to participate in an SPS to mitigate their corresponding incremental loading contributions. As a result, the total amount of generation tripping potential under double outage contingencies with the inclusion of all queued projects could potentially increase in excess of 2,300 MW.

With the addition of new transmission facilities south of Antelope, Phase 1 and Phase 2 of the Antelope Transmission Project, the total amount of generation tripping could be reduced down to approximately 1,700 MW which is still in excess of the 1,400 MW CAISO Spinning Reserve limit. As such, SCE will require CAISO Operational approval to exceed the currently established 1,400 MW N-2 generation tripping limit if use of an SPS for the PEF Addition is to be considered. Arming studies necessary to support the SPS design and approval by the WECC RAS Task Force will determine the exact amount of generation tripping requirements once they are completed. However, due to design limitations, the PEF Addition may require complete redesign of the recently installed PEF SPS.

LIMITED OPERATION STUDIES

The proposed in-service date for the PEF Addition is earlier than a number of generation and transmission projects ahead in queue. Due to system limitations, the PEF Addition will not be allowed to generate prior to these upgrades being in service without additional studies. Operational studies will be necessary to identify if the PEF Addition can be placed in-service on a temporary basis, under limited condition (output and period), prior to constructing the currently planned transmission upgrades, except for the Pastoria-Pardee Reconductor Project, and any new transmission upgrades identified for this project during the Facilities Study. The operation of the PEF Addition prior to the in-service date of the transmission projects identified in the Facilities Study will be subject to CAISO approval.

FACILITY STUDY

A **Facilities Study** will be required to determine the facilities and upgrades necessary to interconnect the proposed PEF Addition. The study should:

1. Investigate feasibility and develop cost associated with upgrading the existing Pastoria-Pardee-Warne 230 kV T/L. Thermal base case overload on this transmission line was triggered by a project in queue ahead of the PEF Addition. Prior to the inclusion of the PEF Addition, the overload was found to be marginal and therefore upgrade was not recommended. The transmission upgrade that should be evaluated is the reconductoring with new ACSS/TW class conductor such as a 1334.6 ACSS/TW or other conductor with mechanical properties similar to the existing 1033 ACSR in order to avoid tear-down of existing tower infrastructure.
2. If reconductor with new ACSS/TW class conductor is not feasible, develop cost associated with the complete tear-down and rebuild of the Pastoria-Pardee-Warne 230 kV T/L with bundled 1590 ACSR conductor.
3. For loss of two transmission lines in the Big Creek Corridor south of Magunden, investigate with the CAISO the possibility of tripping generation in excess of the current 1,400 MW limit.
4. If the CAISO does not allow tripping in excess of the current 1,400 MW N-2 Spinning Reserve limit, investigate feasibility and develop costs associated with a new 230 kV T/L from Pastoria to Pardee.
5. Perform Technical Assessments with the following upgrades modeled in the case in order to determine if sufficient capacity is made available with the upgrades in place:
 - a. Upgrade to the existing Antelope-Mesa 230 kV T/L. This transmission upgrade was identified in a System Impact Study performed for a project in queue ahead of the PEF Addition. The project upgraded should involve complete tear-down and rebuild with

- i. 500 kV single-circuit construction standards between the SCE Antelope and SCE Rio Hondo substations
 - ii. 230 kV double-circuit construction standards with a single bundled 1590 ACSR conductor between the SCE Rio Hondo and SCE Mesa 230 kV substations
- b. Upgrade the existing section of the Antelope-Magunden No.2 230 kV T/L south of the newly proposed Cottonwind 230 kV substation. This transmission upgrade was identified in a System Impact Study performed for a project in queue ahead of the PEF Addition. The project upgrade should involve complete tear-down and rebuild with bundled 1590 ACSR conductor.
- c. Upgrade to the existing Pardee-Pastoria-Warne 230 kV T/L with 1334.6 ACSS/TW.
- d. Path 26 dispatch at 3,700 MW consistent with May 2, 2005 upgraded Path Rating.
- 6. If the initial technical studies determine that operating the new 500 kV facilities at 230 kV is insufficient, then perform additional studies to reevaluate system operating 500 kV facilities at 500 kV.
- 7. Determine if a Special Protection Scheme can be utilized to mitigate any remaining single and double contingency overloads.
 - a. If a special protection scheme is feasible, develop appropriate remedial action scheme, identify necessary protection requirements and develop cost.
 - b. If a special protection scheme is found to be infeasible, identify additional transmission upgrades necessary to mitigate any remaining impacts and develop cost.
- 8. Evaluate circuit breakers at the seven locations identified in Table 5 and develop costs for any breaker replacements as applicable.
- 9. Reevaluate single-phase-to-ground and three-phase-to-ground short-circuit duty including transmission upgrades listed in Item 5, review any additional substation locations, and develop cost.

TABLES

Table 6-1
SCE A-Bank Substation Load Forecast (MW)
with 1-in-10 Year Heat Wave Adjustment

Substation	2004	2005	2006	2007	2008	2009	2010
Alamitos	151	152	154	155	157	158	158
Antelope-Bailey	592	602	614	623	634	642	650
Barre	660	669	673	733	756	763	769
Blythe	61	62	63	64	64	65	66
Camino	2	2	2	2	2	2	2
Center	474	480	496	500	505	507	510
Chevmain	51	51	51	51	51	51	51
Chino	649	674	694	712	731	745	761
Cima	2	2	2	2	2	2	2
Del Amo	459	475	485	445	452	455	463
Devers-Mirage	776	800	825	847	872	435	400
Eagle Mt.	5	5	5	5	5	5	5
Eagle Rock	184	186	188	189	191	191	192
Ellis	586	598	609	638	645	649	656
El Nido	336	343	350	357	361	363	367
Etiwanda	544	567	581	595	619	630	644
Ameron	57	57	57	57	57	57	57
Goleta	233	236	239	241	244	245	247
Gould	98	100	101	102	104	104	105
Hinson	455	459	405	408	412	410	411
Johanna	394	402	411	418	425	431	436
Kramer	305	309	312	315	318	329	334
La Cienega	392	399	406	410	416	418	421
La Fresa	647	654	661	666	674	675	679
Laguna Bell	549	552	563	576	577	584	588
Lewis	596	603	616	630	644	656	665
Lighthipe	536	545	612	614	623	629	635
Mesa	535	542	547	552	562	563	566
Mirage	0	0	0	0	0	470	476
Mira Loma	570	596	623	648	666	681	697
Moorpark	595	610	624	636	649	677	806
Oak Valley	0	0	0	0	0	0	173
Olinda	354	360	370	377	381	385	388
Padua	595	603	616	627	643	650	658
Rector	514	526	535	543	552	557	563
Rio Hondo	669	678	682	689	694	697	701
San Bernardino	494	501	514	526	530	539	550
Santa Clara	521	534	544	552	559	562	567
Santiago	957	642	664	692	710	728	749
Saugus	575	594	613	631	649	666	581
Springville	173	176	180	182	186	188	189
Valley	1077	1127	1174	1220	1266	1306	1347
Vestal	175	179	184	188	193	196	201
Victor	515	525	538	547	559	565	573
Viejo	0	361	370	374	381	388	397
Villa Park	689	708	717	721	727	732	740
Vista 66kV	671	690	707	727	745	752	766
Vista 115kV	407	428	441	450	474	494	385
Walnut	626	634	648	657	667	672	680
Total	20,506	20,998	21,466	21,894	22,334	22,669	23,027

Table 6-2
SCE A-Bank Substation Load Forecast (MW)
60% of 1-in-10 Year Heat Adjusted Forecast

Substation	2004	2005	2006	2007	2008	2009	2010
Alamitos	91	91	92	93	94	95	95
Antelope-Bailey	355	361	368	374	380	385	390
Barre	396	401	404	440	454	458	461
Blythe	37	37	38	38	38	39	40
Camino	1	1	1	1	1	1	1
Center	284	288	298	300	303	304	306
Chevmain	31	31	31	31	31	31	31
Chino	389	404	416	427	439	447	457
Cima	1	1	1	1	1	1	1
Del Amo	275	285	291	267	271	273	278
Devers-Mirage	466	480	495	508	523	261	240
Eagle Mt.	3	3	3	3	3	3	3
Eagle Rock	110	112	113	113	115	115	115
Ellis	352	359	365	383	387	389	394
El Nido	202	206	210	214	217	218	220
Etiwanda	326	340	349	357	371	378	386
Ameron	34	34	34	34	34	34	34
Goleta	140	142	143	145	146	147	148
Gould	59	60	61	61	62	62	63
Hinson	273	275	243	245	247	246	247
Johanna	236	241	247	251	255	259	262
Kramer	183	185	187	189	191	197	200
La Cienega	235	239	244	246	250	251	253
La Fresa	388	392	397	400	404	405	407
Laguna Bell	329	331	338	346	346	350	353
Lewis	358	362	370	378	386	394	399
Lighthipe	322	327	367	368	374	377	381
Mesa	321	325	328	331	337	338	340
Mirage	0	0	0	0	0	282	286
Mira Loma	342	358	374	389	400	409	418
Moorpark	357	366	374	382	389	406	484
Oak Valley	0	0	0	0	0	0	104
Olinda	212	216	222	226	229	231	233
Padua	357	362	370	376	386	390	395
Rector	308	316	321	326	331	334	338
Rio Hondo	401	407	409	413	416	418	421
San Bernardino	296	301	308	316	318	323	330
Santa Clara	313	320	326	331	335	337	340
Santiago	574	385	398	415	426	437	449
Saugus	345	356	368	379	389	400	349
Springville	104	106	108	109	112	113	113
Valley	646	676	704	732	760	784	808
Vestal	105	107	110	113	116	118	121
Victor	309	315	323	328	335	339	344
Viejo	0	217	222	224	229	233	238
Villa Park	413	425	430	433	436	439	444
Vista 66kV	403	414	424	436	447	451	460
Vista 115kV	244	257	265	270	284	296	231
Walnut	376	380	389	394	400	403	408
Total	12,304	12,599	12,880	13,136	13,400	13,601	13,816

**Table 7-1
Heavy Summer Power Flow Study Results**

Outage Case	Outage Type	Transmission Outage	Overloaded Transmission Facilities	Rating MVA	Amp	Pre-Project Amps	Percent	Post Project Amps	Percent	Project Impact Amps	Percent
0	None	Base Case	Antelope-Cottonwind 230 kV Antelope-Mesa 230 kV	494 357	1240 895	1203 996	97.0% 111.3%	1261 1026	101.7% 114.7%	58 31	4.7% 3.4%
6	Single	Pardee-Pastoria 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	1331	107.4%	1470	118.6%	139	11.2%
7	Single	Bailey-Pastoria 230 kV	Pardee-Pastoria-Warne 230 kV Antelope-Cottonwind 230 kV	494 494	1240 1240	1370 1370	110.5% 110.5%	1513 1435	122.0% 115.7%	142 65	11.5% 5.2%
8	Single	Bailey-Pardee 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	1300	104.8%	1437	115.8%	137	11.0%
14	Single	Antelope-Cottonwind 230 kV	Pardee-Pastoria-Warne 230 kV Antelope-Magunden No. 1 230 kV	494 357	1240 895	1281 1028	103.3% 114.9%	1398 1097	112.7% 122.6%	116 69	9.4% 7.7%
15	Single	Antelope-Magunden No. 1 230kV	Antelope-Cottonwind 230 kV	494	1240	1418	114.3%	1493	120.4%	75	6.0%
19	Single	New Antelope-Vincent 230 kV	Existing Vincent-Antelope 230 kV	494	1240	1268	102.3%	1350	108.9%	82	6.6%
21	Single	Mesa-Vincent 230 kV	Mesa-Antelope 230 kV	357	895	1167	130.4%	1202	134.3%	35	3.9%
27	Single	Eagle Rock-Mesa 230 kV	Antelope-Mesa 230 kV	357	895	1133	126.6%	1169	130.6%	36	4.1%
41	Double	Pardee-Pastoria 230 kV Pardee-Pastoria-Warne 230 kV	Bailey-Pastoria 230 kV Bailey-Pardee 230 kV Antelope-Magunden No. 1 230 kV Antelope-Cottonwind 230 kV	598 598 357 494	1500 1500 895 1240	1982 1764 996 1598	132.2% 117.6% 111.3% 128.8%	2210 1972 1092 1705	147.3% 131.5% 122.0% 137.5%	227 208 96 108	15.2% 13.9% 10.8% 8.7%
42	Double	Bailey-Pastoria-230 kV Pardee-Pastoria-Warne 230 kV	Pardee-Pastoria 230 kV Antelope-Magunden No. 1 230 kV Antelope-Cottonwind 230 kV	598 357 494	1500 895 1240	1898 1037 1641	126.5% 115.9% 132.3%	2118 1139 1754	141.2% 127.2% 141.4%	221 101 112	14.7% 11.3% 9.1%
43	Double	Bailey-Pastoria 230 kV Pardee-Pastoria 230 kV	Pardee-Pastoria-Warne 230 kV Pardee-Pastoria-Warne 230 kV Antelope-Magunden No. 1 230 kV Antelope-Cottonwind 230 kV	494 494 357 494	1240 1240 895 1240	2086 1885 1055 1659	168.2% 152.0% 117.9% 133.8%	2315 2111 1157 1771	186.7% 170.2% 129.3% 142.8%	229 226 102 112	18.5% 18.2% 11.4% 9.1%
44	Double	Bailey-Pardee 230 kV Pardee-Pastoria-Warne 230 kV	Pardee-Pastoria 230 kV Antelope-Magunden No. 1 230 kV Antelope-Cottonwind 230 kV	598 357 494	1500 895 1240	1763 966 1566	117.6% 107.9% 126.3%	1969 1059 1670	131.3% 118.3% 134.7%	206 93 104	13.7% 10.4% 8.3%

Table 7-1
Heavy Summer Power Flow Study Results

[illegible]

Table 7-2
Light Spring (with Ventura Gen) Power Flow Study Results
Stressing the Antelope leg of the Big Creek Corridor

Outage Case	Transmission Outage	Transmission Overloaded Facilities	Rating		Pre Project		Post Project		Project Impact	
			MVA	Amps	Amps	Percent	Amps	Percent	Amps	Percent
0	Base Case	Antelope-Cottonwind 230 kV	494	1240	1332	107.4%	1389	112.0%	57	4.6%
		Antelope-Mesa 230 kV	357	895	994	111.0%	1023	114.3%	29	3.3%
5	Pardee-Pastoria-Warne 230 kV	Bailey-Pastoria 230 kV	598	1500	1553	103.5%	1696	113.0%	143	9.5%
		Pardee-Pastoria 230 kV	598	1500	1466	97.7%	1600	106.6%	134	8.9%
		Bailey-Pardee 230 kV	598	1500	1436	95.7%	1566	104.4%	131	8.7%
		Antelope-Magunden No. 1 230 kV	357	895	896	100.1%	960	107.3%	64	7.2%
6	Pardee-Pastoria 230 kV	Antelope-Cottonwind 230 kV	494	1240	1495	120.6%	1712	138.1%	217	17.5%
		Pardee-Pastoria-Warne 230 kV	494	1240	1631	131.6%	1772	142.9%	141	11.4%
		Bailey-Pardee 230 kV	494	1240	1449	116.9%	1580	127.4%	131	10.6%
		Pardee-Pastoria-Warne 230 kV	494	1240	1437	115.9%	1567	126.3%	130	10.4%
		Antelope-Magunden No. 1 230 kV	357	895	909	101.6%	974	108.8%	65	7.2%
7	Bailey-Pastoria 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	1655	133.4%	1798	145.0%	144	11.6%
		Pardee-Pastoria-Warne 230 kV	494	1240	1460	117.7%	1587	127.9%	127	10.2%
		Pardee-Pastoria 230 kV	598	1500	1502	100.1%	1639	109.3%	137	9.1%
		Antelope-Magunden No. 1 230 kV	357	895	927	103.6%	994	111.1%	67	7.5%
		Antelope-Cottonwind 230 kV	494	1240	1513	122.0%	1601	129.1%	88	7.1%
8	Bailey-Pardee 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	1602	129.2%	1741	140.4%	139	11.2%
		Pardee-Pastoria-Warne 230 kV	494	1240	1408	113.5%	1544	124.5%	137	11.0%
		Pardee-Pastoria 230 kV	598	1500	1451	96.8%	1584	105.6%	133	8.8%
		Antelope-Magunden No. 1 230 kV	357	895	893	99.8%	957	106.9%	64	7.1%
13	Magunden-Cottonwind 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	1356	109.4%	1471	118.6%	115	9.2%
		Antelope-Magunden No. 1 230 kV	357	895	945	105.6%	1012	113.1%	67	7.5%
14	Antelope-Cottonwind 230 kV	Bailey-Pastoria 230 kV	494	1240	1492	120.3%	1614	130.1%	122	9.8%
		Pardee-Pastoria-Warne 230 kV	494	1240	1537	123.9%	1655	133.5%	118	9.5%
		Pardee-Pastoria-Warne 230 kV	494	1240	1341	108.2%	1457	117.5%	116	9.3%
		Bailey-Pardee 230 kV	494	1240	1350	108.9%	1459	117.7%	109	8.8%
		Antelope-Magunden No. 1 230 kV	357	895	1197	133.7%	1266	141.4%	69	7.7%
		Pardee-Pastoria 230 kV	598	1500	1388	92.5%	1501	100.1%	113	7.5%

Table 7-2
Light Spring (with Ventura Gen) Power Flow Study Results
Stressing the Antelope leg of the Big Creek Corridor

Outage Case	Transmission Outage	Transmission Overloaded Facilities	Rating		Pre Project		Post Project		Project Impact	
			MVA	Amps	Amps	Percent	Amps	Percent	Amps	Percent
15	Antelope-Magunden No. 1 230 kV	Bailey-Pastoria 230 kV	494	1240	1340	108.1%	1456	117.4%	116	9.4%
		Pardee-Pastoria-Warne 230 kV	494	1240	1394	112.4%	1508	121.6%	113	9.1%
		Antelope-Cottonwind 230 kV	494	1240	1581	127.5%	1652	133.2%	72	5.8%
19	New Antelope-Vincent 230 kV	Existing Antelope-Vincent 230 kV	494	1240	1495	120.6%	1572	126.8%	77	6.2%
		Antelope-Mesa 230 kV	357	895	1126	125.8%	1160	129.6%	34	3.8%
21	Mesa-Vincent 230 kV	Antelope-Mesa 230 kV	357	895	1137	127.0%	1168	130.5%	31	3.5%
38	Magunden-Pastoria No. 1 230 kV Magunden-Pastoria No. 2 230 kV	Antelope-Magunden No. 1 230 kV	357	895	928	103.7%	965	107.8%	37	4.1%
39	Magunden-Pastoria No. 1 230 kV Magunden-Pastoria No.3 230 kV	Antelope-Magunden No.1 230 kV	357	895	931	104.0%	968	108.1%	37	4.1%
40	Magunden-Pastoria No. 2 230 kV Magunden-Pastoria No. 3 230 kV	Antelope-Magunden No.1 230 kV	357	895	931	104.0%	968	108.1%	37	4.1%
41	Pardee-Pastoria 230 kV Pardee-Pastoria-Warne 230 kV	Bailey-Pastoria 230 kV	494	1240	2425	195.6%	2663	214.7%	237	19.1%
		Bailey-Pardee 230 kV	494	1240	2250	181.4%	2466	198.9%	217	17.5%
		Antelope-Magunden No. 1 230 kV	357	895	1227	137.0%	1327	148.3%	100	11.2%
		Antelope-Cottonwind 230 kV	494	1240	1838	148.2%	1950	157.2%	112	9.0%
42	Bailey-Pastoria 230 kV Pardee-Pastoria-Warne 230 kV	Pardee-Pastoria 230 kV	598	1500	2348	156.5%	2579	171.9%	231	15.4%
		Antelope-Magunden No. 1 230 kV	357	895	1264	141.2%	1370	153.0%	106	11.9%
		Antelope-Cottonwind 230 kV	494	1240	1875	151.2%	1993	160.8%	118	9.5%
43	Bailey-Pastoria 230 kV Pardee-Pastoria 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	2555	206.0%	2801	225.9%	246	19.9%
		Pardee-Pastoria-Warne 230 kV	494	1240	2353	189.8%	2595	209.3%	242	19.5%
		Antelope-Magunden No. 1 230 kV	357	895	1279	142.9%	1387	155.0%	108	12.1%
		Antelope-Cottonwind 230 kV	494	1240	1891	152.5%	2012	162.3%	121	9.8%
44	Bailey-Pardee 230 kV Pardee-Pastoria-Warne 230 kV	Pardee-Pastoria 230 kV	598	1500	2230	148.7%	2443	162.9%	213	14.2%
		Antelope-Magunden No. 1 230 kV	357	895	1194	133.4%	1289	144.0%	96	10.7%
		Antelope-Cottonwind 230 kV	494	1240	1805	145.5%	1911	154.1%	106	8.6%
45	Bailey-Pardee 230 kV Pardee-Pastoria 230kV	Pardee-Pastoria-Warne 230 kV	494	1240	2430	196.0%	2655	214.1%	225	18.2%
		Pardee-Pastoria-Warne 230 kV	494	1240	2230	179.8%	2451	197.7%	221	17.9%
		Antelope-Magunden No. 1 230 kV	357	895	1208	135.0%	1305	145.8%	97	10.8%
		Antelope-Cottonwind 230 kV	494	1240	1820	146.7%	1928	155.5%	108	8.7%

Light Spring (with Ventura Gen) Power Flow Study Results Stressing the Antelope leg of the Big Creek Corridor

[illegible]

**Table 7-3
Light Spring NoVgen Power Flow Study Results
Stressing the Pardee leg of the Big Creek corridor (NoVgen)**

Outage Case	Outage Type	Transmission Outage	Overloaded Transmission Facilities	Rating MVA	Amps	Pre-Project Amps	Percent	Post-Project Amps	Percent	Project Impact Amps	Percent
0	Single	Base Case	Pardee-Pastoria-Warne 230 kV	494	1240	1255	101.2%	1360	109.7%	106	8.5%
			Antelope-Cottonwind 230 kV	494	1240	1294	104.4%	1354	109.2%	60	4.8%
			Antelope-Mesa 230 kV	357	895	954	106.5%	984	109.9%	31	3.4%
5	Single	Pardee-Pastoria-Warne 230 kV	Bailey-Pastoria 230 kV	598	1500	1584	105.6%	1729	115.3%	146	9.7%
			Pardee-Pastoria 230 kV	598	1500	1502	100.1%	1639	109.2%	137	9.1%
			Bailey-Pardee 230 kV	598	1500	1475	98.3%	1608	107.2%	133	8.9%
6	Single	Pardee-Pastoria 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	1670	134.7%	1809	145.9%	139	11.2%
			Pardee-Pastoria-Warne 230 kV	494	1240	1475	118.9%	1611	129.9%	137	11.0%
			Bailey-Pastoria 230 kV	598	1500	1600	106.7%	1742	116.1%	141	9.4%
			Bailey-Pardee 230 kV	598	1500	1488	99.2%	1618	107.9%	129	8.6%
			Antelope-Cottonwind 230 kV	494	1240	1465	118.1%	1536	123.8%	71	5.7%
7	Single	Bailey-Pastoria 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	1691	136.4%	1838	148.2%	147	11.8%
			Pardee-Pastoria-Warne 230 kV	494	1240	1495	120.6%	1639	132.2%	144	11.6%
			Pardee-Pastoria 230 kV	598	1500	1537	102.4%	1676	111.8%	140	9.3%
			Antelope-Magunden No. 1 230 kV	357	895	897	100.2%	965	107.8%	68	7.6%
			Antelope-Cottonwind 230 kV	494	1240	1482	119.5%	1559	125.7%	77	6.2%
8	Single	Bailey-Pardee 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	1641	132.3%	1781	143.7%	141	11.4%
			Pardee-Pastoria-Warne 230 kV	494	1240	1445	116.6%	1584	127.7%	138	11.1%
			Pardee-Pastoria 230 kV	598	1500	1488	99.2%	1623	108.2%	134	8.9%
13	Single	Cottonwind-Magunden 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	1376	110.9%	1492	120.3%	116	9.4%
			Pardee-Pastoria-Warne 230 kV	494	1240	1182	95.3%	1296	104.5%	114	9.2%
			Antelope-Magunden No. 1 230 kV	357	895	900	100.5%	967	108.1%	67	7.5%
14	Single	Antelope-Cottonwind 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	1558	125.7%	1673	134.9%	115	9.3%
			Pardee-Pastoria-Warne 230 kV	494	1240	1361	109.8%	1475	119.0%	114	9.2%
			Bailey-Pastoria 230 kV	598	1500	1505	100.3%	1624	108.2%	119	7.9%
			Antelope-Magunden No. 1 230 kV	357	895	1153	128.9%	1219	136.2%	65	7.3%
			Pardee-Pastoria 230 kV	598	1500	1408	93.9%	1518	101.2%	110	7.3%
15	Single	Antelope-Magunden No. 1 230 kV	Pardee-Pastoria-Warne 230 kV	494	1240	1414	114.1%	1531	123.4%	116	9.4%
			Pardee-Pastoria-Warne 230 kV	494	1240	1220	98.4%	1334	107.6%	114	9.2%
			Antelope-Cottonwind 230 kV	494	1240	1534	123.7%	1607	129.6%	74	6.0%
21	Single	Mesa-Vincent 230 kV	Antelope-Mesa 230 kV	357	895	1095	122.4%	1127	125.9%	32	3.6%
41	Double	Pardee-Pastoria 230 kV Pardee-Pastoria-Warne 230 kV	Bailey-Pastoria 230 kV	598	1500	2478	165.2%	2709	180.6%	231	15.4%
			Bailey-Pardee 230 kV	598	1500	2310	154.0%	2521	168.1%	211	14.1%
			Antelope-Magunden No. 1 230 kV	357	895	1207	134.9%	1303	145.6%	96	10.7%
			Antelope-Cottonwind 230 kV	494	1240	1820	146.8%	1923	155.1%	103	8.3%

Table 7-3
Light Spring NoVgen Power Flow Study Results
Stressing the Pardee leg of the Big Creek corridor (NoVgen)

[illegible]

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WATER RESOURCES

Appendix B (g) (1) ...provide a discussion of the existing site conditions, the expected direct, indirect and cumulative impacts due to the construction, operation and maintenance of the project, the measures proposed to mitigate adverse environmental impacts of the project, the effectiveness of the proposed measures, and any monitoring plans proposed to verify the effectiveness of the mitigation.

Appendix B (g) (14) (B): Ground water bodies and related geologic structures;

Response: The existing ground water bodies and related geologic structures remain unchanged from the AFC submitted for the existing PEF (99-AFC-7). Section 5.5 Water Resources from 99-AFC-7 is included in Volume II Attachment D of the AFC for the PEF Expansion (05-AFC-1). Ground water information as it applies to the existing PEF plant site is included in Section 5.5 as follows: Sections 5.5.1.1.2 (page 5.5-3), 5.5.2.1.2 (page 5.5-8), 5.5.3 (page 5.5-10), and 5.5.4 (page 5.5-11).

Appendix B (g) (14) (B) (ii): Surface water bodies;

Response: The existing surface water bodies remain unchanged from the AFC submitted for the existing PEF (99-AFC-7). Section 5.5 Water Resources from 99-AFC-7 is included in Volume II Attachment D of the AFC for the PEF Expansion (05-AFC-1). Surface water information as it applies to the existing PEF plant site is included in Section 5.5 as follows: Sections 5.5.1.1.2 (page 5.5-3), 5.5.2.1.2 (page 5.5-8), 5.5.3 (page 5.5-10), and 5.5.4 (page 5.5-11). The measured flow data for Pastoria Creek also remains unchanged from 99-AFC-7 and is presented in Table 5.5-1 (page 5.5-13) of Section 5.5 from 99-AFC-7.

Appendix B (g) (14) (B) (iii): Water inundation zones, such as the 100-year flood plain and tsunami run-up zones.

Response: The existing water inundation zones remain unchanged from the AFC submitted for the existing PEF (99-AFC-7). Section 5.5 Water Resources from 99-AFC-7 is included in Volume II Attachment D of the AFC for the PEF Expansion (05-AFC-1). Water inundation information as it applies to the existing PEF plant site is included in Section 5.5 as follows: Sections 5.5.1.1.2 (page 5.5-2), 5.5.2.1.2 (page 5.5-7), 5.5.3 (page 5.5-10), and 5.5.4 (page 5.5-11).

Because of the location of the existing PEF in an alluvial fan, flood modeling was conducted as part of pre-construction compliance that resulted in the need to raise areas of the plant site above the 100-year floodplain. The expansion project will be located at this same, elevated grade as the existing facility, above the 100-year floodplain, as approved by the Commission as part of 99-AFC-7. These PEF floodplain studies were reviewed and approved by the Kern

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County CBO prior to the start of construction of the existing PEF and all measures have been implemented to the satisfaction of the Kern County CBO. The final accepted hydrology and hydraulics studies for the existing PEF were achieved through both the submittal of reports as well as through numerous meetings attended by URS technical staff members, Calpine representatives, and representatives from Kern County in the Spring/Summer 2001. The studies that support the hydrology and hydraulics are as follows: 1) Draft Hydrology Analysis for the Pastoria Energy Facility, dated July 12, 2001. This analysis was accepted by Kern County and is included as part of the 99-AFC-7C compliance proceedings; 2) The Flood Inundation Study for the Pastoria Energy Facility, dated September 6, 2001, addresses floodplain hydraulics and is also included in Compliance proceedings. In addition to the floodplain studies, all of the Kern County CBO approvals are on file at the CEC (see Compliance Project Manager Files for 99-AFC-7C). If after further consultation between the applicant and CEC technical staff regarding confirming the technical understanding of this issue, additional information is still needed, the applicant will submit this information as part of the Discovery Process.

Appendix B (g) (14) (C) (iii): Average and maximum daily and annual water demand and waste water discharge for both the construction and operation phases of the project;

Response: Section 3.4.8 includes information on Water Supply and Treatment for the PEF Expansion Project (pages 3-16 through 3-21). Average and maximum daily and annual water demand for operations is addressed in Table 3.4.8-1 that presents the PEF Expansion incremental water usage rates as compared to the existing PEF, Figure 3.4-4 that shows the water balance diagram for the existing PEF, and Figure 3.4-5 that shows the PEF Expansion water balance. Wastewater treatment and discharge for operations is addressed in Section 3.4.8.4 (pages 3-17 through 3-21). Average and maximum daily and annual water demand and wastewater discharge for the construction phase of the project is expected to be minimal. Construction water usage is expected to be approximately 7650 gallons per day (average and maximum basis) and approximately 1.53 million gallons during the 12-month construction period for dust control and potable uses for construction personnel. Wastewater of approximately 150 gallons per day (average and maximum basis) and approximately 30,000 gallons during the 12-month construction phase is expected to be limited to construction staff sanitary sewage waste in portable chemical toilets.

Appendix B (g) (14) (D) (i): Precipitation and storm runoff patterns; and

Response: The existing precipitation and storm water runoff patterns for the project area remains unchanged from the AFC submitted for the existing PEF (99-AFC-7). Section 5.5 Water Resources from 99-AFC-7 is included in Volume II Attachment D of the AFC for the PEF Expansion (05-AFC-1). Precipitation and Storm Water runoff information as it applies

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to the existing PEF plant site is included in Section 5.5 as follows: Sections 5.5.1.1.2 (page 5.5-3), 5.5.2.1.2 (page 5.5-8), 5.5.3 (page 5.5-10), and 5.5.4 (page 5.5-11). Precipitation data also remains unchanged from 99-AFC-7 and is included in Tables 5.5-2 and 5.5-3 (page 5.5-13) of Section 5.5 from 99-AFC-7.

Appendix B (g) (14) (D) (ii): Drainage facilities and design criteria.

Response: See response to **Appendix B (g) (14) (B) (iii)** above.

Appendix B (g) (14) (iii): The effects of the project on the 100-year flood plain or other water inundation zones

Response: See response to **Appendix B (g) (14) (B) (iii)** above.

Appendix B (h) (1) (A) Tables which identify laws, regulations, ordinances, standards, adopted local, regional, state, and federal land use plans, and permits applicable to the proposed project, and a discussion of the applicability of each. The table or matrix shall explicitly reference pages in the application wherein conformance, with each law or standard during both construction and operation of the facility is discussed;

Response: Exhibit 6 includes an update to the LORS that apply to Water Resources as both a revised narrative and a revised matrix.

Appendix B (h) (2) A discussion of the conformity of the project with the requirements listed in subsection (h)(1)(A).

Response: A revised Section 7.5.5, is included in Exhibit 6 that addresses this request

Appendix B (h) (3) The name, title, phone number, and address, if known, of an official within each agency who will serve as a contact person for the agency

Response: The contact information for the administering agencies responsible for implementing LORS for Water Resources are included in Section 7.0, pages 7-32 through 7-37.

Appendix B (h) (4): A schedule indicating when permits outside the authority of the commission will be obtained and the steps the applicant has taken or plans to take to obtain such permits.

Response: Since the PEF Expansion will be using the existing linears for existing PEF, no impacts to wetlands or waters of the U.S. will occur as a result of construction of the PEF Expansion project. Therefore, the only regulatory compliance issues are related to the management of stormwater that will occur through the preparation of a new or amended

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Construction SWPPP that will be prepared prior to the start of construction of the PEF Expansion. In addition, the existing PEF Operational SWPPP will be amended to address the PEF Expansion facilities prior to the commencement of operation of the PEF Expansion unit. The preparation and implementation of these plans will ensure that the project complies with NPDES and RWQCB stormwater pollution prevention requirements.